

Curriculum
of
Diploma Programme
in
Library and Information Science



State Board of Technical Education (SBTE)
Bihar

Semester – III

Teaching & Learning Scheme

Board of Study	Course Codes	CourseTitles	Teaching & Learning Scheme (Hours/Week)					
			Classroom Instruction (CI)		Lab Instruction (LI)	Notional Hours (TW+ SL)	Total Hours (CI+LI+TW+SL)	Total Credits (C)
			L	T				
	2441301	Foundation of Library and Information Science	2	1	-	2	5	4
	2441302	Library House Keeping Operation	2	1	4	2	9	6
	2441303	Knowledge Organization Library Classification and Cataloguing	2	1	4	2	9	6
	2441304	MIS for Libraries	2	1	4	2	9	6
	2418305	Python Programming	3	-	4	2	9	6
	2400008	Sports, Yoga and Meditation (Common for all Programmes)	-	-	1	1	2	1
	2400009	Open Educational Resources (Non-exam Course)	1	-	-	-	1	1
Total			12	4	17	11	44	30

Legend:

- CI: Classroom Instruction (Includes different instructional/implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem-based learning etc. to deliver theoretical concepts)
- LI: Laboratory Instruction (Includes experiments/practical performances /problem-based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)
- Notional Hours: Hours of engagement by learners, other than the contact hours for ensuring learning.
- TW: Term work (includes assignments, seminars, micro-projects, industrial visits, any other student activities etc.)
- SL: Self Learning, MOOCs, spoken tutorials, online educational resources etc.
- C: Credits = (1 x CI hours) + (0.5 x LI hours) + (0.5 x Notional hours)

Note: TW and SL have to be planned by the teacher and performed by the learner under the continuous guidance and feedback of the teacher to ensure the outcome of learning.

Semester - III Assessment Scheme

Board of Study	Course Codes	Course Titles	Assessment Scheme (Marks)						Total Marks (TA+TWA+LA)
			Theory Assessment (TA)		Term work & Self-Learning Assessment (TWA)		Lab Assessment (LA)		
			Progressive Theory Assessment (PTA)	End Theory Assessment (ETA)	Internal	External	Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)	
	2441301	Foundation of Library and Information Science	30	70	20	30	-	-	150
	2441302	Library House Keeping Operation	30	70	20	30	20	30	200
	2441303	Knowledge Organization Library Classification and Cataloguing	30	70	20	30	20	30	200
	2441304	MIS for Libraries	30	70	20	30	20	30	200
	2418305	Python Programming	30	70	20	30	20	30	200
	2400008	Sports, Yoga and Meditation (Common for all Programmes)	-	-	10	-	06	09	25
	2400009	Open Educational Resources (Non-exam Course)	25	-	-	-	-	-	25
Total			175	350	110	150	86	129	1000

Legend:

- PTA: Progressive Theory Assessment in class room (includes class test, mid-term test and quiz using online/offline modes)
 PLA: Progressive Laboratory Assessment (includes process and product assessment using rating Scales and rubrics)
 TWA: Term work & Self Learning Assessment (Includes assessment related to student performance in assignments, seminars, micro projects, industrial visits, self-learning, any other student activities etc.)

Note:

- ETA & ELA are to be carried out at the end of the term/ semester.
- Term Work is to be done by the students under the guidance of internal faculty but its assessment will be done **internally (40%)** as well as **externally (60%)**. Assessment related to planning and execution of Term Work activities like assignment, micro project, seminar and self-learning is to be done by internal faculty (Internal Assessment) whereas assessment of output/product/ presentation related to these activities will be carried out by external faculty/expert (External Assessment). However, criteria of internal as well as external assessment may vary as per the requirement of respective course. For valid and reliable assessment, the internal faculty should prepare checklist & rubrics for these activities.

- A) **Course Code** : **2441301 (T2441301 /S2441301)**
 B) **Course Title** : **Foundation of Library and Information Science.**
 C) **Pre- requisite Course(s)** :
 D) **Rationale** :

The course Foundation of Library and Information Science has been design to impart the basic knowledge of Foundation of Library and Information Science. It mainly deals with the roll and functions of a library, Historical development of libraries in India and aboard, model public library acts laws of library science and overall the roll of library in the social development. It emphasis upon the philosophy of librarianship, knowledge economy and detailed information about prominent library association of the country and across the globe.

- E) **Course Outcomes (COs):** After completion of the course, the student will be able to:-

After completion of the course, the students will be able to-

- CO-1** Make students appreciate the basic philosophy and ethics of librarianship.
CO-2 Explain the evolution and development of libraries as a social institution.
CO-3 Describe the types of libraries, there nature and functions and there responsibility towards the controlling organization.
CO-4 Create awareness about the role of professional library association.
CO-5 Understand the concept of resource sharing among libraries, library consortium in general.

- F) **Suggested Course Articulation Matrix (CAM):**

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Communication Skills	PO-3 Professionalism	PO-4 Problem Solving	PO-5 Digital working skills	PO-6 Awareness about ethical practices	PO-7 Life Long Learning	PSO-1	PSO-2
CO-1	3	2	-	-	-	1	-		
CO-2	2	2	-	-	1	1	-		
CO-3	2	2	1	-	-	1	-		
CO-4	2	1	1	1	1	-	-		
CO-5	3	3	2	2	-	1	1		

Legend: High (3),Medium (2),Low(1) and No mapping(-)

- * PSOs will be developed by respective program coordinator at institute level. As per latest NBA guidelines, formulating PSOs is optional

G) Teaching & Learning Scheme:

Board of Study	Course Code	Course Title	Scheme of Study (Hours/Week)					
			Classroom Instruction (CI)		Lab Instruction (LI)	Notional Hours (TW+ SL)	Total Hours (CI+LI+TW+ SL)	Total Credits (C)
			L	T				
SBTE, BIHAR	2441301	Foundation of Library & Info. Science.	02	01	-	02	05	04

Legend:

CI: Classroom Instruction (Includes different instructional/implementation strategies i.e.Lecture (L), Tutorial(T), Case method, Demonstrations, Video demonstration, Problem-based learning etc. to deliver theoretical concepts)

LI: Laboratory Instruction (Includes experiments/practical performances /problem-based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)

Notional Hours: Hours of engagement by learners, other than the contact hours for ensuring learning.

TW: Term Work (includes assignments, seminars, micro-projects, industrial visits, any other student activities etc.)

SL: Self Learning, MOOCs, Spoken Tutorials, online educational resources etc.

C: Credits= (1 x CI hours) + (0.5 x LI hours) + (0.5 x Notional hours)

Note: Tw and SL have to be planned by the teacher and performed by the learner under the continuous guidance and feedback of teacher to ensure outcome of learning.

H) Assessment Scheme:

Board of Study	Course Code	Course Title	Assessment Scheme(Marks)						Total Marks(TA+TWA+LA)
			Theory Assessment (TA)		Term Work& Self-Learning Assessment (TWA)		Lab Assessment (LA)		
			Progressive Theory Assessment	End Theory Assessment (ETA)	Internal	External	Progressive Lab Assessment	End Laboratory Assessment	
SBTE, BIHAR	2441301	Foundation of Library & Info. Science.	30	70	20	30	-	-	150

Legend:

PTA: Progressive Theory Assessment in class room (includes class test, mid-term test and quiz using online/offline modes)

PLA: Progressive Laboratory Assessment (includes process and product assessment using rating Scales and rubrics)

TWA: Teamwork & Self Learning Assessment (Includes assessment related to student performance in assignments, seminars, micro projects, industrial visits, self-learning, any other student activities etc.

Note:

- ETA & ELA are to be carried out at the end of the term/ semester.
- Term Work is to be done by the students under the guidance of internal faculty but its assessment will be done **internally (40%)** as well as **externally (60%)**. Assessment related to planning and execution of Term Work activities like assignment, micro project, and seminar and self-learning is to be done by internal faculty (Internal Assessment) whereas assessment of output/product/ presentation related to these activities will be carried out by external faculty/expert (External Assessment). However, criteria of internal as well as external assessment may vary as per the requirement of respective course. For valid and reliable assessment, the internal faculty should prepare checklist & rubrics for these activities.

I) **Course Curriculum Detailing:** This course curriculum detailing depicts learning outcomes at course level and session level and their attainment by the students through Classroom Instruction (CI), Laboratory Instruction (LI), Term Work (TW) and Self Learning (SL). Students are expected to demonstrate the attainment of Theory Session Outcomes (TSOs) and Lab Session Outcomes (LSOs) leading to attainment of Course Outcomes (COs) upon the completion of the course. While curriculum detailing, NEP 2020 related reforms like Green skills, Sustainability, Multidisciplinary aspects, Society connect, Indian Knowledge System (IKS) and others must be integrated appropriately.

J) **Theory Session Outcomes (TSOs) and Units: T2441301**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 1a. Write an essay on Origin and development of Library TSO 1b. Describe the Modern Library TSO 1c. Describe the objectives of Library TSO 1d. Write a note explaining the importance of library TSO 1e. Explain the function of Library TSO 1f. Describe the Scope of Library TSO 1g. Describe the role of library as recreational centre.	Unit-1.0 Library, Documentation and Information :- Concept, Objective and Scope 1.1 Meaning and definition of Library 1.2 Modern Library System. 1.3 Role and objective of Library and information centre. 1.4 Scope and functions of Library 1.5 Evolution and Development of Libraries. 1.6 Library and education system. 1.7 Library as recreation centers.	1&2
TSO 2a. Explain five laws of library science TSO 2b Describe the implication of "Every reader his or her book" TSO 2c List the five laws of library science and explain the first law in detail TSO 2d State briefly the implication of Fifth laws of library science. TSO 2e Explain what are measures adopted by Libraries to save the time of the reader.	Unit-2.0 Five laws of library science: Implication 2.1 Five laws of library science enunciated by Dr. S.R. Ranganathan. 2.2 Implication of Five Laws in Library and information activities. 2.3 Relevance of five law in present technology oriented environment.	2&4
TSO 3a Briefly describe the National Library. TSO 3b Describe the activities of National Library. TSO 3c Name the types of Academic Library. TSO 3d Describe the importance and Role of academic library. TSO 3e Describe the objective and function of special library.	Unit-3.0 Type and function of libraries 3.1 National Library: Feature, Objective, Function, Role and Service 3.2 Public Library: Feature, Objective, Function, Role, and Service 3.3 Academic Library: Feature, Objective, Function, Role and Service 3.4 Special Libraries: Feature, Objective, Function, Role and service.	3&5
TSO 4a Explain Library building TSO 4b Describe pre-requisite elements in planning of library building. TSO 4c Explain the structure of library building. TSO 4d Explain principle and standard related to library building.	Unit-4.0 Library organization: Library Building, Furniture and equipment 4.1 Library building. 4.2 Pre-requisite elements in planning of library building. 4.3 Structure of library building. 4.4 Principle and standard related to Library building.	2&3

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
TSO 4e Explain the role of librarian and architect in construction of library building. TSO 4f Describe the library building in content to five laws of library science. TSO 4g Explain the concept of library furniture and equipment TSO 4h Explain furniture, equipment and standard for library.	4.5 Role of Librarian and Architect in construction of library 4.6 Relevance of Fifth Law in construction of library building. 4.7 Furniture and equipment of library: Concept Furniture, Equipment and standard for library.	
TSO5a. Describe Resource sharing TSO5b Explain the need and objective of resource sharing TSO5c Describe scope and pre-requisite for resource sharing TSO5d Describe requirement for organization of resource sharing TSO5e Describe prominent library network in India TSO5f Describe Library consortia is essential discuss.	Unit-5.0 Library co-operation resource sharing and consortium 5.1 Resource sharing: Meaning and definition 5.2 Need and Object of resource sharing 5.3 Scope of resource 5.4 Requirement for organization of resource sharing 5.5 Networks for resource sharing in India 5.6 Library consortium.	5
TSO6a Explain the meaning and purpose of library professional organization and association TSO6b Explain the objective, functions and activities of Library organization and association. TSO6c Write an essay on ILA TSO6d Write the main activities and services of IASLIC TSO6e Write the main activities of IFLA	Unit-6.0 Library professional organization and association-National and International 6.1 Meaning of Library organization and activities 6.2 Characteristics of library organization and association 6.3 Indian Association – ILA, IASLIC, IATLIS 6.4 International Association-IFLA, FID, UNESCO	2&4

Note: One major TSO may require more than one Theory session/Period.

K) Suggested Term Work and Self Learning: S2441301

Assignments: Questions/Problems/Numerical/Exercises to be provided by the course teacher in line with the targeted COs.

1. Prepare a detailed worksheet on Academic Libraries .
2. Write a dissertation on National library of india.
3. Prepare a list of public libraries of your state.
4. Write an essay on five laws of library science given by Dr. Ranganathan.
5. Prepare an assignment on the activities and services of IFLA.
6. Make a detail list of main Library Professional Association in India.
7. Write about the role of UNESCO in the development of education in SAARC Countries.
8. Prepare a chart of essential education and experiences for different library post prevailing in the academic libraries.

Micro Projects:

1. Make a Project on Library Professional Association in India.
2. Prepare a detail project on international library association.
3. Write a dissertation on ILA .
4. Prepare a detail project on educational and cultural activities of UNESCO.
5. Make a project on library legislation adopted by various states of India.

Other Activities:

1. Seminar Topics:
 - Role of IFLA in the development of public libraries in India.
 - UNESCO as the promoter of library movement in the World.
 - Relevance of traditional library in the changed technological scenario.
 - Training of Library Staff on New Technology.
2. Visits: Visiting following places would provide students an opportunity to see the application of various branches of mathematics in different fields. This will also help students to comprehend the career opportunities available in the field of mathematics.
 - Visit to a Public Library.
 - Visit to a University Library.
 - Visit to a Library of Technical Institute.
 - Visit to the National Library of India.
 - Visit to a Library of National Importance.

L) **Suggested Course Evaluation Matrix:** The course teacher has to decide and use appropriate assessment strategy and its weightage in theory, laboratory and Term Work for ensuring CO attainment. The response/performance of each student in each of these designed activities is to be used to calculate **CO attainment**.

COs	Course Evaluation Matrix						
	Theory Assessment (TA)**		Term Work Assessment (TWA)			Lab Assessment (LA)#	
	Progressive Theory Assessment (PTA) Class/Mid Sem Test	End Theory Assessment (ETA)	Term Work& Self Learning Assessment			Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)
			Assignments	Micro Projects	Other Activities*		
CO-1	15%	15%	15%	20%	15%	-	-
CO-2	25%	25%	25%	20%	25%	-	-
CO-3	10%	10%	10%	20%	10%	-	
CO-4	20%	20%	20%	20%	20%	-	-
CO-5	30%	30%	30%	30%	20%	-	-
Total Marks	30	70	20	20	10	-	-
			50				

Legend:

*: Other Activities include self- learning, seminar, visits, surveys, product development, software development etc.

** : Mentioned under point- (N)

: Mentioned under point-(O)

Note:

- The percentage given are approximate
- In case of Micro Projects and End Laboratory Assessment (ELA), the achieved marks will be equally divided in all those COs mapped with total experiments.
- For CO attainment calculation indirect assessment tools like course exit survey need to be used which comprises of questions related to achievement of each COs.

M) Suggested Specification Table for End Semester Theory Assessment: Specification table represents the reflection of sample representation of assessment of cognitive domain of full course.

Unit Title and Number	Total Classroom Instruction (CI) Hours	Relevant COs Number(s)	Total Marks	ETA (Marks)		
				Remember (R)	Understanding (U)	Application & above (A)
Unit-1.0 Library, Documentation and Information :- Concept, Objective and Scope	4	CO1	10	4	4	4
Unit-2.0 Five laws of library science: Implication	5	CO2	10	3	6	5
Unit-3.0 Type and function of libraries	12	CO3	10	3	4	3
Unit-4.0 Library organization: Library Building, Furniture and equipment	10	CO4	10	4	5	2
Unit-5.0 Library co-operation resource sharing and consortium	7	CO5	10	3	6	5
Unit- 6.0 Library professional organization and association- National and International	12	CO6	20	3	3	3
Total	50	-	70	20	28	22

Note: Similar table can also be used to design class/mid-term/ internal question paper for progressive assessment.

N) Suggested Instructional/Implementation Strategies: Different Instructional/ Implementation Strategies may be appropriately selected, as per the requirement of the content/outcome. Some of them are Improved Lecture, Tutorial, Case Method, Group Discussion, Industrial visits, Industrial Training, Field Trips, Portfolio Based, Learning, Role Play, Live Demonstrations in Classrooms, Lab, Field Information and Communications Technology (ICT)Based Teaching Learning, Blended or flipped mode, Brainstorming, Expert Session, Video Clippings, Use of Open Educational Resources (OER), MOOCs etc.

O) Suggested Learning Resources:

(a) **Books:**

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Documentation and information services	S.M. Tripathi	Y. K Publisher, Agra
2.	Knowledge and Society	Balvir Singh	Y. K Publisher, Agra

3.	Library and information science and information technology (Hindi)	B.K Sharma & Thakur Part-I	Y. K Publisher, Agra
4.	Library and Society	B.K Sharma & Thakur Part-I	Y. K Publisher, Agra
5.	Library Organisation	Krishna Kumar	Vikash Publication
6.	Library and Society	J.K. Khanna	Kurukshetra University, 1987

(P) Online Educational Resources:

1. <https://ignou.ac.in/>
2. <https://www.inflibnet.ac.in/>
3. <https://www.engranthalaya.nic.in/>
4. <https://epgp.inflibnet.ac.in/>
5. <https://nptel.ac.in/>
6. <https://www.mooc.org/>
7. <https://www.jstor.org/>
8. <https://ndl.iitkgp.ac.in/>
9. <https://www.nic.in/>
10. <https://egyankosh.ac.in/>

Note: Teachers are requested to check the creative commons license status/ financial implications of the suggested, online educational resources before use by the students.

- A) **Course Code** : **2441302 (T2441302 /P2441302 /S2441302)**
- B) **Course Title** : **Library House Keeping Operation**
- C) **Pre- requisite Course(s)** :
- D) **Rationale**

The normative principle of Library and Information Science is to stress on the basic concept of the subject- "Book/Information are for Use and books and Information are for all. The course "Library House Keeping operation" has been designed with an aim to fulfill the above objective. The Course is aimed to provide the basic knowledge about in house works of the library e.g. book acquisition, technical processing, circulation management etc.

- E) **Course Outcomes (COs):** After completion of the course, the student will be able to:-

After completion of the course, the students will be able to-

- CO-1** Describe the basic concept of Library House Keeping operation
- CO-2** Understand the functions of various Departments of Library
- CO-3** Explain activities and tasks involved in various House Keeping Operation
- CO-4** Perform automated housekeeping jobs related to acquisition, Cataloguing, Classification, Serial control and Circulation.
- CO-5** Explain Manuscript, Rules of Library, Library Planning, application of ICT in housekeeping works in the library

- F) **Suggested Course Articulation Matrix (CAM):**

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Communication Skills	PO-3 Professionalism	PO-4 Problem Solving	PO-5 Digital working skills	PO-6 Awareness about ethical practices	PO-7 Life Long Learning	PSO-1	PSO-2
CO-1	3	2	-	-	-	1	-		
CO-2	2	2	-	-	1	1	-		
CO-3	2	2	1	-	-	1	-		
CO-4	2	1	1	1	1	-	-		
CO-5	3	3	2	2	-	1	1		

Legend: High (3),Medium (2),Low(1) and No mapping(-)

- * PSOs will be developed by respective program coordinator at institute level. As per latest NBA guidelines, formulating PSOs is optional

G) Teaching & Learning Scheme:

Board of Study	Course Code	Course Title	Scheme of Study (Hours/Week)					
			Classroom Instruction (CI)		Lab Instruction (LI)	Notional Hours (TW+ SL)	Total Hours (CI+LI+TW+SL)	Total Credits (C)
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SBTE, BIHAR	2441302	Library House keeping Operaton	02	01	04	02	09	06

Legend:

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H) Assessment Scheme:

Board of Study	Course Code	Course Title	Assessment Scheme(Marks)						Total Marks(TA+TWA+LA)
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SBTE, BIHAR	2441302	Library House keeping Operaton	30	70	20	30	20	30	200

Legend:

PTA: Progressive Theory Assessment in class room (includes class test, mid-term test and quiz using online/offline modes)

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TWA: Teamwork & Self Learning Assessment (Includes assessment related to student performance in assignments, seminars, micro projects, industrial visits, self-learning, any other student activities etc.

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J) **Theory Session Outcomes (TSOs) and Units: T2441302**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
<i>TSO 1a.</i> Write in detail about Library House Keeping Operation <i>TSO 1b.</i> Describe Scope and utility of Library <i>TSO 1c.</i> Explain the need and purpose of Library House Keeping Operation <i>TSO 1d.</i> Explain the characteristic of Library House Keeping Operation	Unit-1.0 Library House Keeping Operation 1.1 Meaning and Definition 1.2 Scope and Utility 1.3 Purpose and Need 1.4 Characteristics of Library House keeping	CO1
<i>TSO 2a.</i> Explain Different department of Library <i>TSO 2b.</i> Explain Library reception <i>TSO 2c.</i> Explain in detail about library reading room <i>TSO 2d.</i> Describe reference section <i>TSO 2e.</i> Write the function of Maintenance Section	Unit-2.0 Different departments of Library 2.1 Reception 2.2 Reading Room 2.3 Lending section 2.4 Reference section 2.5 Maintenance Section	CO1 & 2
<i>TSO 3a.</i> Write in detail about Acquisition: Book selection, ordering and allotment. <i>TSO 3b.</i> Explain Technical section <i>TSO 3c.</i> Explain maintenance of binding (print and Non-print material) <i>TSO 3d.</i> Explain microform Unit	Unit-3.0 Acquisition: Book section, ordering and Allotment 3.1 Technical Processing (Classification and cataloguing) 3.2 Maintenance Section:- Binding (Print and Non-Print materials), Fumigation, Chemical Treatment etc. 3.3 Reprography (Xeroxing/Photostat) 3.4 Microform Unit	CO3 & 4
<i>TSO 4a.</i> Explain manuscript <i>TSO 4b.</i> Describe different types of manuscript <i>TSO 4c.</i> Briefly describe the maintenance of manuscript <i>TSO 4d.</i> Explain duplication of manuscript <i>TSO 4e.</i> Describe the preservation and conservation of manuscript	Unit-4.0 Manuscript Maintenance 4.1 Kinds of manuscript 4.2 Maintenance of manuscript 4.3 Duplication of manuscript 4.4 Preservation and conservation of manuscript	CO4 & 5
<i>TSO 5a.</i> Write in detail about Rules of Library <i>TSO 5b.</i> Explain membership <i>TSO 5c.</i> Explain lending <i>TSO 5d.</i> Describe Circulation <i>TSO 5e.</i> Explain serial Control Operation.	Unit-5.0 Rules of Library 5.1 Membership 5.2 Lending 5.3 Circulation 5.4 Serial Control	CO5

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
<i>TSO6a.</i> Explain Library building plan <i>TSO6b.</i> Describe furniture and fixtures <i>TSO6c.</i> Explain about Library equipments	Unit-6.0 Library Planning 6.1 Building Plan 6.2 Furniture and fixtures 6.3 Library Equipments	CO1 & 5

Note: One major TSO may require more than one Theory session/Period.

K) Suggested Laboratory (Practical) / Tutorials and Outcomes: P2441302

Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
<i>LSO 1.1.</i> Familiarization with computerized Acquisition sub system. <i>LSO 1.2.</i> Familiarization with outputs/reports of computers and Acquisition Jobs	Unit-1	Computerized Acquisition (Practice) 1.1 Suggestion management 1.2 Order/Invoice Generation 1.3 Payment processing 1.4 Accessioning	1 & 4
<i>LSO 2.1.</i> Understands Basic requirement for Catalogue <i>LSO 2.2</i> Describe Catalogue Cards <i>LSO 2.3</i> Makes Catalogue of 10 Books with Single Author <i>LSO 2.4</i> Make Catalogue of 05 Books with Joint Author	Unit-2	Computerized Cataloguing (Practice) 2.1 Basic Requirements of Cataloguing 2.2 Cataloguing Modules 2.3 Cataloguing Practice-Single & Joint Author 2.4 Making Catalogue Cards	2 & 4
<i>LSO 3.1</i> Describe the comput. Serial Control <i>LSO 3.2</i> Explain the process of Creation of master database <i>LSO 3.3</i> Describe the procedure of Database Maintenance <i>LSO 3.4</i> Briefly Describe the Subscription Management	Unit-3	Computerized Serial Control (Practice) 3.1 Familiarization with comput. Serial Control 3.2 Creation of master database 3.2 Maintenance of master database 3.4 Subscription Management 3.5 Circulation Management of Serials	1, 4 & 5
<i>LSO 4.1</i> Explain Comput. Circulation System <i>LSO 4.2</i> Write the Procedure of Member Registration & Maintenance <i>LSO 4.3</i> Explain Issue/Return Process in Brief <i>LSO 4.4</i> Write the Process to Generate Daily Reports	Unit-4	Computerized Circulation (Practice) 4.1 Familiarization with comput. Circulation 4.2 Membership management 4.3 Issue/Return Practice 4.4 Report Generation	2 & 4

L) Suggested Term Work and Self Learning: S2441302

Assignments: Questions/Problems/Numerical/Exercises to be provided by the course teacher in line with the targeted COs.

1. Prepare a detailed worksheet on House Keeping Operation of Library.
2. Describe the function of different department of library in detail.
3. Explain the maintenance works done in the library.
4. Describe automated House Keeping (in the library).
5. Write the procedure of book acquisition.
6. Describe the circulation management.
7. Explain the Comput. Serial Control in detail.
8. Prepare a Assignment on manuscript maintenance in the library.
9. Make a chart of DOs & DONTs of the library rules.

Micro Projects:

1. Prepare a Project on Collection of your library.
2. Conduct a survey of user needs in the library you are attached with.
3. Prepare a Chart of daily issue/return in your library.
4. Make a Project on the various maintenance works done in the academic library.
5. Prepare a Project on KARDEX System .

Other Activities:

1. Seminar Topics:
 - Use of ICT in the library.
 - Changing pattern of library demands.
 - Relevane of traditional library in the changed technological scenario.
 - Training of Library Staff on New Technology.
2. Visits: Visiting following places would provide students an opportunity to see the application of various branches of mathematics in different fields. This will also help students to comprehend the career opportunities available in the field of mathematics.
 - Visit to a Public Library.
 - Visit to a University Library.
 - Visit to a Library of Technical Institute.
 - Visit to the National Library of India.
 - Visit to a Library of National Importance.

M) Suggested Course Evaluation Matrix: The course teacher has to decide and use appropriate assessment strategy and its weightage in theory, laboratory and Term Work for ensuring CO attainment. The response/performance of each student in each of these designed activities is to be used to calculate **CO attainment**.

COs	Course Evaluation Matrix						
	Theory Assessment (TA)**		Term Work Assessment (TWA)			Lab Assessment (LA)#	
	Progressive Theory Assessment (PTA) Class/Mid Sem Test	End Theory Assessment (ETA)	Term Work& Self Learning Assessment			Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)
			Assignments	Micro Projects	Other Activities*		
CO-1	15%	15%	15%	20%	15%	10%	16%
CO-2	25%	25%	25%	20%	25%	15%	16%
CO-3	10%	10%	10%	20%	10%	15%	18%
CO-4	20%	20%	20%	20%	20%	25%	16%

CO-5	30%	30%	30%	20%	30%	15%	18%
Total Marks	30	70	20	20	10	20	30
			50				

Legend:

- *: Other Activities include self- learning, seminar, visits, surveys, product development, software development etc.
 **: Mentioned under point- (N)
 #: Mentioned under point-(O)

Note:

- The percentage given are approximate
- In case of Micro Projects and End Laboratory Assessment (ELA), the achieved marks will be equally divided in all those COs mapped with total experiments.
- For CO attainment calculation indirect assessment tools like course exit survey need to be used which comprises of questions related to achievement of each COs.

N) Suggested Specification Table for End Semester Theory Assessment: Specification table represents the reflection of sample representation of assessment of cognitive domain of full course.

Unit Title and Number	Total Classroom Instruction (CI) Hours	Relevant COs Number(s)	Total Marks	ETA (Marks)		
				Remember (R)	Understanding (U)	Application & above (A)
Unit-1. Library House Keeping Operation	7	1	10	4	4	4
Unit-2.0 Different departments of Library	7	1 & 2	12	3	6	5
Unit-3.0 Acquisition: Book section, ordering and Allotment	12	2 & 4	16	3	4	3
Unit-4.0 Manuscript Maintenance	10	1 & 5	16	4	5	2
Unit-5.0 Rules of Library	7	2 & 5	9	3	6	5
Unit- 6.0 Library Planning	7	1, 2 & 3	7	3	3	3
Total	50	-	70	20	28	22

Note: Similar table can also be used to design class/mid-term/ internal question paper for progressive assessment.

O) Suggested Instructional/Implementation Strategies: Different Instructional/ Implementation Strategies may be appropriately selected, as per the requirement of the content/outcome. Some of them are Improved Lecture, Tutorial, Case Method, Group Discussion, Industrial visits, Industrial Training, Field Trips, Portfolio Based, Learning, Role Play, Live Demonstrations in Classrooms, Lab, Field Information and Communications Technology (ICT) Based Teaching Learning, Blended or flipped mode, Brainstorming, Expert Session, Video Clippings, Use of Open Educational Resources (OER), MOOCs etc.

P) List of Major Laboratory Equipment, Tools and Software:

S. No.	Name of Equipment, Tools and Software	Broad Specifications	Relevant Experiment/Practical Number
1.	Computer Systems	Processor Intel Core i5 with RAM 32 GB, 15 GB Free Disc Space	All
2.	Integrated Library Management Software (ILMS)	Software Specification as per the size & type of the libraries. Eg.-E-Granthalaya, Koha, Libsys etc.	All
3.	Printer	High Speed Duplex Printer	All
4.	Scanner	Handheld 3D scanner, Bar Code Scanner, Flat Bed Scanner of High Resolution.	All

Q) Suggested Learning Resources:**(a) Books:**

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Basics of Library Information Series	K.T. Dilli	Vikash Publication House, New Delhi.
2.	. "Library Software Selection: An Analysis".	Mishra, R.K	IASLIC Bulletin. 44.3 (1999)
3.	The System Librarian.	Murihead, G.	London: Library Association Publishing, 1994
4.	. The Library Administrator's Automation Handbook	Boss, R. W	. Medford, NJ: Information Today, 1997. Print.

(b) Online Educational Resources:

1. <https://ignou.ac.in/>
2. <https://www.inflibnet.ac.in/>
3. <https://www.engranthalaya.nic.in/>
4. <https://epgp.inflibnet.ac.in/>
5. <https://nptel.ac.in/>
6. <https://www.mooc.org/>
7. <https://www.jstor.org/>
8. <https://ndl.iitkgp.ac.in/>
9. <https://www.nic.in/>
10. <https://egyankosh.ac.in/>

Note: Teachers are requested to check the Creative Commons license status/ financial implications of the suggested, online educational resources before use by the students.

A)	Course Code	: 2441303 (T2441303 /P2441303/S2441303)
B)	Course Title	: Knowledge Organization Library Classification and Cataloguing
C)	Pre- requisite Course(s)	:
D)	Rationale	:

This course, Knowledge Organization Library Classification and Cataloguing is intended to give a Basic knowledge of classification and cataloguing. The concept of Library classification along with the need for it and its objectives are described in it. Different types of classification are also explained along with the latest trends in classification and Organization of web resources. Forms of Library Catalogue, subject Cataloguing and catalogue entries and latest trends in Cataloguing are included in it.

After completion of the course, the students will be able to-

- CO-1** Identify a book or a bit of information from a huge store of knowledge.
- CO-2** Explain salient features of AACR-2 and CCC.
- CO-3** Trace various tables and schedule of DDC.
- CO-4** Classify books according to DDC 19th addition.
- CO-5** Do cataloguing of various books as per AACR2- Code.

E) Suggested Course Articulation Matrix (CAM):

Course Outcomes (COs)	Program Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Communication Skills	PO-3 Professionalism	PO-4 Problem Solving	PO-5 Digital working skills	PO-6 Awareness about ethical practices	PO-7 Life Long Learning	PSO-1	PSO-2
CO-1	3	1	-	-	1	1	-		
CO-2	3	2	-	-	2	1	-		
CO-3	2	2	1	2	1	1	1		
CO-4	3	3	1	1	1	1	-		
CO-5	2	3	2	2	1	1	1		

Legend: High (3), Medium (2), Low (1) and No mapping (-)

- * PSOs will be developed by respective program coordinator at institute level. As per latest NBA guidelines, formulating PSOs is optional

F) Teaching & Learning Scheme:

Board of Study	Course Code	Course Title	Scheme of Study (Hours/Week)					
			Classroom Instruction (CI)		Lab Instruction (LI)	Notional Hours (TW+ SL)	Total Hours (CI+LI+TW+SL)	Total Credits (C)
			L	T				
SBTE, BIHAR	2441303	Know. Org. Library Class. & Cataloguing	02	01	04	02	09	06

Legend:

- CI: Classroom Instruction (Includes different instructional/implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem-based learning etc. to deliver theoretical concepts)
- LI: Laboratory Instruction (Includes experiments/practical performances /problem-based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)
- Notional Hours: Hours of engagement by learners, other than the contact hours for ensuring learning.
- TW: Term Work (includes assignments, seminars, micro-projects, industrial visits, any other student activities etc.)
- SL: Self Learning, MOOCs, Spoken Tutorials, online educational resources etc.
- C: Credits= (1 x CI hours) + (0.5 x LI hours) + (0.5 x Notional hours)

Note: Tw and SL have to be planned by the teacher and performed by the learner under the continuous guidance and feedback of teacher to ensure outcome of learning.

G) Assessment Scheme:

Board of Study	Course Code	Course Title	Assessment Scheme(Marks)						Total Marks(TA+TWA+LA)
			Theory Assessment(TA)		Term Work& Self-Learning Assessment(TWA)		Lab Assessment(LA)		
			Progressive Theory Assessment (PTA)	End Theory Assessment (ETA)	Internal	External	Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)	
SBTE, BIHAR	2441303	Know. Org. Lib. Class. & Cataloguing.	30	70	20	30	20	30	200

Legend:

- PTA: Progressive Theory Assessment in class room (includes class test, mid-term test and quiz using online/offline modes)
- PLA: Progressive Laboratory Assessment (includes process and product assessment using rating Scales and rubrics)
- TWA: Term work & Self Learning Assessment (Includes assessment related to student performance in assignments, seminars, micro projects, industrial visits, self-learning, any other student activities etc.)

Note:

- ETA & ELA are to be carried out at the end of the term/ semester.
- Term Work is to be done by the students under the guidance of internal faculty but its assessment will be done **internally (40%)** as well as **externally (60%)**. Assessment related to planning and execution of Term Work activities like assignment, micro project, and seminar and self-learning is to be done by internal faculty (Internal Assessment) whereas assessment of output/product/ presentation related to these activities will be carried out by external faculty/expert (External Assessment). However, criteria of internal as well as external assessment may vary as per the requirement of respective course. For valid and reliable assessment, the internal faculty should prepare checklist & rubrics for these activities.

H) Course Curriculum Detailing: This course curriculum detailing depicts learning outcomes at course level and session level and their attainment by the students through Classroom Instruction (CI), Laboratory Instruction (LI), Term Work (TW) and Self Learning (SL). Students are expected to demonstrate the attainment of Theory Session Outcomes (TSOs) and Lab Session Outcomes (LSOs) leading to attainment of Course Outcomes (COs) upon the completion of the course. While curriculum detailing, NEP 2020 related reforms like Green skills, Sustainability, Multidisciplinary aspects, Society connect, Indian Knowledge System (IKS) and others must be integrated appropriately

I) Theory Session Outcomes (TSOs) and Units: T2441303

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
<i>TSO 1a.</i> Write in detail about the Basics of Classification <i>TSO 1b.</i> Explain the need and purpose of Classification <i>TSO 1c.</i> Describe the concept of Call number, Class number and Basic Number <i>TSO 1d.</i> Explain Species of Classification <i>TSO 1e.</i> Describe the Salient Features of DDC, CC and UDC <i>TSO 1f.</i> Explain the meaning and definition of Notation <i>TSO 1g.</i> Describe types and function of Notation.	Unit-1.0 Basic of Classification 1.1 Definition, Need and purpose of Classification 1.2 Concept of Call Number, Class Number and Basic Number 1.3 Species of Classification 1.4 Salient features of DDC, CC and UDC 1.5 Notation, Definition, Kinds and function.	1&3
<i>TSO 2a.</i> Write in detail about the Theoretical foundation of classification <i>TSO 2b.</i> Describe the phase relation, common isolates and other auxiliary table of DDC, CC and UDC <i>TSO 2c.</i> Explain Postulation approach to classification <i>TSO 2d.</i> Explain five fundamental categories and facet sequence <i>TSO 2e.</i> Write in detail about the Device and indicator digits. <i>TSO 2f.</i> Write about the Recent development in classification	Unit-2.0 Theoretical Fundamentals of Classification 2.1 Phase Relation, Common Isolated and other Auxiliary Table of DDC, CC and UDC 2.2 Postulation approach to classification and Five fundamental categories and facet sequence 2.3 Devices, Indicator digits. 2.4 Recent developments in Classification	3&4
<i>TSO 3a.</i> Write in detail about the basic of cataloguing <i>TSO 3b.</i> Explain the meaning of Library catalogue <i>TSO 3c.</i> Describe the function type and physical form <i>TSO 3d.</i> Explain History of catalogue code <i>TSO 3e.</i> Describe the kinds of entries and their function in detail <i>TSO 3f.</i> Describe the Salient features of AACR-II and CCC	Unit-3.0 Basics of Cataloguing 3.1 Library catalogue: Definition function type and physical form 3.2 Kinds of entries and their functions 3.3 History of catalogue code 3.4 Salient features of AACR-II and CCC	2&5
<i>TSO 4a.</i> Write in detail about the normative Principles and subject cataloguing <i>TSO 4b.</i> Describe the Canons of cataloguing	Unit-4.0 Normative Principles and subject cataloguing 4.1 Normative Principles and canon of cataloguing	2&5

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
<i>TSO 4c.</i> Explain chain procedure and subject heading lists <i>TSO 4d.</i> Describe in detail filing of entries and Alphabetization	4.2 Subject cataloguing: chain Procedure, Subject Heading lists. 4.3 Filing of Catalogue entries and Alphabetization 4.4 Special Libraries: Feature, Objective, Function, Role and service.	
<i>TSO 5a.</i> Write in detail about the Bibliographical formats and other aspects <i>TSO 5b.</i> Write about the ISBD, MARC, CCF, ISO-2709/Z39.2, Dublin core <i>TSO 5c.</i> Describe the centralized and co-operative cataloguing <i>TSO 5d.</i> Explain the cataloguing of Non-Book Materials, Electron Documents, Audio-Visual Material, and Continuing education	Unit-5.0 Bibliographical Formats and other aspects. 5.1 Standard of bibliographic description and Record Formats : ISBD, MARC, CCF, ISO-2709 Z39.2, Dublin Core. 5.2 Centralized and Co-operative cataloguing simplified cataloguing 5.3 Cataloguing of Non Book Material: Cartographic Material, Electron Documents, Audio-Visual material and Continuing education	1&5

Note:One major TSO may require more than one Theory session/Period.

Rationale:-

Arrangement of book and non-book materials according to subject, author, time, place etc. It is the basic need of Library: hence classification of reading material according to recognized devices have been incorporated in the classification theory papers. The said methods have been put into practice in this chapter. The tools in use are DDC 19th edition and Serials list of subject heading.

J) Suggested Laboratory (Practical) / Tutorials and Outcomes: **P2441303**

Outcomes	S. No.	Laboratory (Practical)/ Tutorials Titles	Relevant COs Number(s)
<i>LSO 1.1.</i> Describe the Terminology used in DDC 19 th edition <i>LSO 1.2.</i> Give a brief introduction to DDC 19 th edition <i>LSO 1.3.</i> Explain the first, second and third summary in DDC.	1.	• Introduction to DDC 19th edition • Terminology • Summaries	1&4
<i>LSO 2.1.</i> Construction numbers for simple titles <i>LSO 2.2.</i> Explain the meaning of constructions of member's method. <i>LSO 2.3.</i> Describe the title with example.	2.	• Construction of numbrs for simple titles • Construction of members-method-Means • Titles	2&4
<i>LSO 3.1.</i> Classify at least 250 titles according to DDC 19 th edition <i>LSO 3.2.</i> Prepare and practice classification work according to DDC 19 th edition.	3.	• Classification work according to DDC 19th edition • Classification of at least 250 titles. •	3&4

K) Suggested Term Work and Self Learning: S2441303

Some sample suggested assignment, micro project and other activities are mentioned here for reference.

- A.** Assignment question/problem/numerical/exercise to provided by the course teacher in the line with the targeted Cos.
1. To develop skills of classification.
 2. To develop skills in subject analysis and synthesis of different facts.
 3. To develop proficiency in using DDC to construction class number for of documents of different discipline/subject.

b. Micro Projects:

1. Prepare a detailed projects on nature and attributes of universe of knowledge
2. Prepare a detailed project on types of subject of models of subject formation.
3. Illustrative knowledge as mapped in different classification scheme.
4. Highlight salient features of major classification scheme.
5. Classification of books and periodicals according to 19th edition
6. Classification of 50 titles of one's own Library.

L) Suggested Course Evaluation Matrix: The course teacher has to decide and use appropriate assessment strategy and its weightage in theory, laboratory and Term Work for ensuring CO attainment. The response/performance of each student in each of these designed activities is to be used to calculate **CO attainment**.

COs	Course Evaluation Matrix						
	Theory Assessment (TA)**		Term Work Assessment (TWA)			Lab Assessment (LA)#	
	Progressive Theory Assessment (PTA) Class/Mid Sem Test	End Theory Assessment (ETA)	Term Work& Self Learning Assessment			Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)
			Assignments	Micro Projects	Other Activities*		
CO-1	15%	15%	15%	20%	15%	10%	15%
CO-2	25%	25%	25%	20%	25%	15%	20%
CO-3	10%	10%	10%	20%	10%	20%	15%
CO-4	20%	20%	20%	20%	20%	15%	10%
CO-5	30%	30%	30%	20%	30%	25%	15%
Total Marks	30	70	20	20	10	20	30
			50				

Legend:

*: Other Activities include self- learning, seminar, visits, surveys, product development, software development etc.

**.: Mentioned under point- (N)

#.: Mentioned under point-(O)

Note:

- The percentage given are approximate
- In case of Micro Projects and End Laboratory Assessment (ELA), the achieved marks will be equally divided in all those COs mapped with total experiments.
- For CO attainment calculation indirect assessment tools like course exit survey need to be used which comprises of questions related to achievement of each COs?

M) Suggested Specification Table for End Semester Theory Assessment: Specification table represents the reflection of sample representation of assessment of cognitive domain of full course.

Unit Title and Number	Total Classroom Instruction (CI) Hours	Relevant COs Number(s)	Total Marks	ETA (Marks)		
				Remember (R)	Understanding (U)	Application & above (A)
Unit-1.0 Basic of Classification	10	CO1	11	4	4	3
Unit-2.0 Theoretical Fundamentals of Classification	12	CO3	16	4	6	6
Unit-3.0 Basics of Cataloguing	8	CO2	10	3	4	3
Unit-4.0 Normative Principles and subject cataloguing	8	CO2&5	12	4	6	2
Unit-5.0 Bibliographical Formats and other aspects.	10	CO5	21	5	8	8
Total	48	-	70	20	28	22

Note: Similar table can also be used to design class/mid-term/ internal question paper for progressive assessment.

N) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Knowledge Organization in Library and Information Science	Dr. S.M. Rokade	Crescent publishing corpn. New Delhi- 02 (1 January 2017)
2.	Library Cataloguing	Krishna Kumar	Vikash Publishing House
3.	Library and Society	J.K. Khanna	Kurukshetra University, 1987
4.	Granthalaya Evam Suchna Vigyan	B.K. Sharma and Others	Y K Publisher, Agra
5.	Pustakalaya Aur Samaj	Pandeya S.K. Sharma	Prabhat Prakashan

(b) Online Educational Resources:

1. <https://ignou.ac.in/>
2. <https://www.inflibnet.ac.in/>
3. <https://www.engrathalaya.nic.in/>
4. <https://epgp.inflibnet.ac.in/>
5. <https://nptel.ac.in/>
6. <https://www.mooc.org/>
7. <https://www.jstor.org/>
8. <https://ndl.iitkgp.ac.in/>
9. <https://www.nic.in/>
10. <https://egyankosh.ac.in/>

- A) Course Code : **2441304 (T2441304 /P2441304/S2441304)**
- B) Course Title : **MIS for Libraries**
- C) Pre- requisite Course(s) :
- D) Rationale :

The subject MIS in libraries gives an unified picture of What management is? And how it is applicable to library. It gives a basic knowledge of Management Information system (MIS) and its usages in the library. MIS provides real time data and insights that enable managers to quickly take decisions. In today's digital age, MIS has become an essential tool for any business to thrive in the market place. In the same way Library professional are also required to be well conversant with the MIS.

E) Course Outcomes (COs):

After completion of this course, the students will be able to:-

- CO-1** Introduce and define modern management approaches, thoughts and their applicability to library.
- CO-2** Describe various functions of management, different levels of management and their roles in library
- CO-3** Explain key principles of management, TQM, Concepts of MIS and its application in library.
- CO-4** Get familiarized with the library finances, methods of Budgeting, Preparation of library reports etc.
- CO-5** Work with the simple LMS e.g.- E-Granghalaya

F) Suggested Course Articulation Matrix (CAM):

Course Outcomes (COs)	Program Outcomes (POs)							Program Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Communication Skills	PO-3 Professionalism	PO-4 Problem Solving	PO-5 Digital working skills	PO-6 Awareness about ethical practices	PO-7 Life Long Learning	PSO-1	PSO-2
CO-1	2	3	-	1	-	1	-		
CO-2	3	2	2	1	1	-	-		
CO-3	3	3	1	2	1	1	1		
CO-4	2	2	1	1	-	-	1		
CO-5	2	3	2	-	2	-	2		

Legend: High (3), Medium (2), Low (1) and No mapping (-)

- * PSOs will be developed by respective program coordinator at institute level. As per latest NBA guidelines, formulating PSOs is optional

G) Teaching & Learning Scheme:

Board of Study	Course Code	Course Title	Scheme of Study (Hours/Week)					
			Classroom Instruction (CI)		Lab Instruction (LI)	Notional Hours (TW+ SL)	Total Hours (CI+LI+TW+SL)	Total Credits (C)
			L	T				
SBTE, BIHAR	2441304	MIS for Library	02	01	04	02	09	06

Legend:

CI: Classroom Instruction (Includes different instructional/implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem-based learning etc. to deliver theoretical concepts)

LI: Laboratory Instruction (Includes experiments/practical performances /problem-based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)

Notional Hours: Hours of engagement by learners, other than the contact hours for ensuring learning.

TW: Term Work (includes assignments, seminars, micro-projects, industrial visits, any other student activities etc.)

SL: Self Learning, MOOCs, Spoken Tutorials, online educational resources etc.

C: Credits= (1 x CI hours) + (0.5 x LI hours) + (0.5 x Notional hours)

Note: Tw and SL have to be planned by the teacher and performed by the learner under the continuous guidance and feedback of teacher to ensure outcome of learning.

H) Assessment Scheme:

Board of Study	Course Code	Course Title	Assessment Scheme(Marks)						Total Marks(TA+TWA+LA)
			Theory Assessment (TA)		Term Work& Self-Learning Assessment (TWA)		Lab Assessment (LA)		
			Progressive Theory Assessment	End Theory Assessment (ETA)	Internal	External	Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)	
SBTE, BIHAR	2441304	MIS for Library	30	70	20	30	20	30	200

Legend:

PTA: Progressive Theory Assessment in class room (includes class test, mid-term test and quiz using online/offline modes)

PLA: Progressive Laboratory Assessment (includes process and product assessment using rating Scales and rubrics)

TWA: Term work & Self Learning Assessment (Includes assessment related to student performance in assignments, seminars, micro projects, industrial visits, self-learning, any other student activities etc.)

Note:

- ETA & ELA are to be carried out at the end of the term/ semester.
- Term Work is to be done by the students under the guidance of internal faculty but its assessment will be done **internally (40%)** as well as **externally (60%)**. Assessment related to planning and execution of Term Work activities like assignment, micro project, and seminar and self-learning is to be done by internal faculty (Internal Assessment) whereas assessment of output/product/ presentation related to these activities will be carried out by external faculty/expert (External Assessment). However, criteria of internal as well as external assessment may vary as per the requirement of respective course. For valid and reliable assessment, the internal faculty should prepare checklist & rubrics for these activities.

- I) **Course Curriculum Detailing:** This course curriculum detailing depicts learning outcomes at course level and session level and their attainment by the students through Classroom Instruction (CI), Laboratory Instruction (LI), Term Work (TW) and Self Learning (SL). Students are expected to demonstrate the attainment of Theory Session Outcomes (TSOs) and Lab Session Outcomes (LSOs) leading to attainment of Course Outcomes (COs) upon the completion of the course. While curriculum detailing, NEP 2020 related reforms like Green skills, Sustainability, Multidisciplinary aspects, Society connect, Indian Knowledge System (IKS) and others must be integrated appropriately.

J) **Theory Session Outcomes (TSOs) and Units: T2441304**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
<i>TSO 1a.</i> Define Management. <i>TSO 1b.</i> Write the various concept of Management <i>TSO 1c.</i> Describe various areas of management in brief. <i>TSO 1d.</i> Write the characteristics of management. <i>TSO 1e.</i> Describe various levels of Management	Unit-1.0 Management Concepts, definition, types etc. 1.1 Concept of Management. 1.2 Definition of Management, 1.3 Characteristics of Management. 1.4 Scope/areas of Management. 1.5 Levels of Management.	1&2
<i>TSO 2a.</i> Briefly describe the functions of Management given by Luther Gulick. <i>TSO 2b.</i> Explain POSDCORB. <i>TSO 2c.</i> Differentiate between directing and coordinating, <i>TSO 2d.</i> Write the works involved in staffing. <i>TSO 2e.</i> Describe reporting in brief. <i>TSO 2f.</i> Define budgeting. <i>TSO2g.</i> Describe main methods of budgeting in brief.	Unit-2.0 Functions of Management (POSDCORB) 2.1 Planning 2.2 Organizing 2.3 Staffing 2.4 Directing 2.5 Coordinating 2.6 Reporting 2.7 Budgeting	1,2&4
<i>TSO 3a.</i> List out the principles of Management given by H. Fayol. <i>TSO 3b.</i> Explain Division of Labour <i>TSO 3c.</i> Write the importance of discipline in Library <i>TSO 3d.</i> Differentiate between Unity of Command & Unity of direction <i>TSO3e.</i> Explain the theory of fair reward in brief. <i>TSO3f.</i> Give the justification for Centralization of work <i>TSO3g.</i> Explain Scalar Chain in brief. <i>TSO3h.</i> Describe Equality	Unit-3.0 Principles of Management (given by Henry Fayol) 3.1 Division of Work 3.2 Authority and responsibility 3.3 Discipline 3.4 Unit of command and Unity of direction 3.5 Remuneration 3.6 Devotion (Subordination of self interest to general interest.) 3.7 Centralization 3.8 Scalar chain	1,2&3

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
<i>TSO3i.</i> Give justification for stability of tenure of personnel in any organization. <i>TSO3j.</i> Explain Espirit De Corps.	3.9 Order 3.10 Equality 3.11 Stability of Tenure of personnel. 3.12 Initiative 3.13 Espirit De Corps.	
<i>TSO 4a.</i> Describe the concept of scientific Management. <i>TSO 4b.</i> Define Scientific management. <i>TSO 4c.</i> Write the Principles of Scientific management <i>TSO 4d.</i> List any five advantages of scientific management <i>TSO 4e.</i> Explain the concept of MBO <i>TSO 4f.</i> Write the advantages of MBO	Unit-4.0 Scientific Management and MBO 4.1 Scientific management:- Concept and definition 4.2 Principles of Scientific Management 4.3 Advantages and Limitation 4.4 Management of Objective (MBO)- concept and definition 4.5 MBO- advantages and Limitations	1,2&5
<i>TSO 5a.</i> Write and explain various forms of reporting <i>TSO 5b.</i> Explain Annual report. <i>TSO 5c.</i> Describe the principle of Financial Management <i>TSO 5d.</i> List the main sources of income of a library. <i>TSO 5e.</i> Explain various methods of Budgeting <i>TSO 5f.</i> Prepare a model budget for a Public Library.	Unit-5.0 Reporting and Budgeting 5.1 Reporting- concept, definition and types 5.2 Library Finance and Budgeting 5.3 What is library Finance? 5.4 Principles of Financial Management 5.5 Sources of Income in Library 5.6 Heads of expenditures 5.7 Budgeting - Concept and Definition 5.8 Methods of Budgeting.	1,3&4
<i>TSOa.</i> Describe the concept of MIS <i>TSOb.</i> Write the role of MIS in Library <i>TSOc.</i> Write the steps involved in Planning. <i>TSOd.</i> Describe the role of Librarian as a leader <i>TSOe.</i> Draw the organizational structure of a public library.	Unit-6.0 MIS and Library. 6.1 MIS- Concept and Definition 6.2 Role of MIS in Library 6.3 Planning in Library 6.4 Librarian as a Leader. 6.5 Library Organization and Control.	1&5

Note: One major TSO may require more than one Theory session/Period.

K) Lab Session Outcomes (TSOs) and Units: P2441304**Rationale/ Objectives :-**

The Objectives of this course is to train the students with the use of MIS in the library. Give them the broad view of office management software (LMS) and their Hands on practice. Train them to use various ICT in the library work.

Major Lab Session Outcomes (LSOs)	Units/Topics	Relevant COs Number(s)
LSO 1- Explain a simple computer system functioning. LSO 2- List out the Hardware and Software LSO 3- Enumerate the name of five Input & Output devices. LSO 4- Write the Safe procedure of S/w ON and S/W Off.	Unit-1.0 Use of ICT in library 1.1 Familiarization with computer system. 1.2 Identification of Hardware and Software Components. 1.3 Input and Output devices 1.4 Systems S/w ON & S/W Off Practice	1&2
LSO 1-Describe the functioning of Windows OS LSO 2- Write the features of WS-7 LSO 3- Prepare a letter for asking 3 days leave form the Principal in MS- Word LSO4- Make a Spread Sheet 3 rd Sem LIS students in MS-Excel LSO5- Prepare a Power Point Presentation on Library	Unit2-Use of system software and Application software 2.1 Windows Operating System- WS-07, Linux, UNIX 2.2 Microsoft Office (MS Office) 2.2.1 MS Word 2.2.2 MS Excel 2.2.3 MS PowerPoint 2.2.4 MS Access.	1,2&4
LSO1- Describe Open source LMS LSO2- Write the salient feature of KOHA LSO3- Describe the Modules of e-Granthalaya LSO4- Write the main feature of Libsys LSO5- Write the special features of Digital Software- Dspace	Unit3-Familiarization with the Library management Software (LMS) 3.1- Open Source LMS- KOHA, e-Granthalaya, NewGenlib. 3.2- Commercial software-Libsys, Librarian 3.3- Digital Library Software- Dspace, Greenstone	1&2
LSO-1 List out the modules of e-Granthalaya LSO2- Write the procedure of Member Registration LSO3- List out the Steps involved in Retro-Conversion LSO4- Describe Circulation module of e-granthalaya.	Unit4- Hands on practice with LMS (any One) 4.1- e- Granthalaya 4.2- New Genlib 4.3- KOHA 4.5- Libsys 4.6- CDS/ISIS	1,2&5
LSO1- Write various forms of reporting in Library LSO2- List out the centers of Annual Report LSO3- Prepare a model Annual report of a library LSO4- Write the main sources of income in the Library LSO5- Prepare a Model Budget for a Public Library	Unit5- Reporting and Budgeting practice 5.1- Familiarization with Annual Report (Format) 5.2- Preparation of Annul Report 5.3- Identification of Sources of income and Heads of expenditure in Library 5.4- Preparation of Model Budget for a Library	1&4

- L) Suggested Term Work and Self Learning: S2441304** Some sample suggested assignments, micro-projects and other activities are mentioned here for reference.
- a. Assignments:** Questions/Problems/Numerical/Exercises to be provided by the course teacher in line with the targeted COs.
- b. Micro Projects:**
1. Prepare a detailed project on role and functions of staffs of your library.
 2. Prepare a detailed list of various areas of management with designations of managers.
 3. Make a list/ table of various levels of management by quoting name of posts coming under each level.
 4. Make an organization chart of an academic library/college library.
 5. Make an organization chart of a public library.
 6. Make a detailed plan to automate your library.
 7. Make a project on principles of Management given by Henry Fayol in the context of Your organization.
 8. Prepare an Annual report for the library where you are doing Lab.
 9. Prepare a model Budget for your library or the library you are attached with.
 10. Make a detailed list of sources of income of a University Library.
 11. Make a detail list of heads of expenditures of a college Library.
 12. Make a project on the qualification, experience, salary etc. of the staff/officers of your library or the library you are attached with.
- c. Other Activities:**
1. Seminar Topics:
 - Traditional library Vs Modern libraries- trend and difference
 - Relevance of Library in the changed digital world.
 - Changing technologies and the library.
 - Limitations and challenges of the modern day libraries
 2. Visits:

Visiting following places would provide students an opportunity to see the application of various types of Library. This will also help students to comprehend the career opportunities available in the field of Library and Information Science

 - Visit to a Public Library.
 - Visit to a University Library.
 - Visit to a Library of Technical Institute.
 - Visit to the National Library of India.
 - Visit to a Library of National Importance.
 - Visit to a Special Library.
- M) Suggested Course Evaluation Matrix:** The course teacher has to decide and use appropriate assessment strategy and its weight age in theory, laboratory and Term Work for ensuring CO attainment. The response/performance of each student in each of these designed activities is to be used to calculate **CO attainment**.

COs	Course Evaluation Matrix						
	Theory Assessment (TA)**		Term Work Assessment (TWA)			Lab Assessment (LA)#	
	Progressive Theory Assessment (PTA) Class/Mid Sem Test	End Theory Assessment (ETA)	Term Work& Self Learning Assessment			Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)
			Assignments	Micro Projects	Other Activities*		
CO-1	15%	15%	15%	20%	15%	10%	15%
CO-2	25%	25%	25%	20%	25%	15%	15%
CO-3	10%	10%	10%	20%	10%	20%	20%
CO-4	20%	20%	20%	20%	20%	15%	10%
CO-5	30%	30%	30%	20%	30%	25%	15%
Total Marks	30	70	20	20	10	20	30
			50				

Legend:

*: Other Activities include self- learning, seminar, visits, surveys, product development, software development etc.

**: Mentioned under point- (N)

#: Mentioned under point-(O)

Note:

- The percentage given are approximate
- In case of Micro Projects and End Laboratory Assessment (ELA), the achieved marks will be equally divided in all those COs mapped with total experiments.
- For CO attainment calculation indirect assessment tools like course exit survey need to be used this comprises of questions related to achievement of each COs.

N) Suggested Specification Table for End Semester Theory Assessment: Specification table represents the reflection of sample representation of assessment of cognitive domain of full course.

Unit Title and Number	Total Classroom Instruction (CI) Hours	Relevant COs Number(s)	Total Marks	ETA (Marks)		
				Remember (R)	Understanding (U)	Application & above (A)
Unit-1.0 Management- concept, definition, and types	6	1&4	8	4	3	3
Unit-2.0 Functions of Management (POSDCORB)	8	1,2&4	12	4	4	4
Unit-3.0 Principles of Management (given by Henry Fayol)	12	1&3	20	7	4	4
Unit-4.0 Scientific Management and MBO	8	1&2	10	4	4	2
Unit-5.0 Reporting and Budgeting	8	1,3&4	12	5	4	4

Unit-6.0 MIS and Library.	8	1,2&5	8	4	3	3
Total	50	-	70	28	22	20

Note: Similar table can also be used to design class/mid-term/ internal question paper for progressive assessment.

O) Suggested Instructional/Implementation Strategies: Different Instructional/ Implementation Strategies may be appropriately selected, as per the requirement of the content/outcome. Some of them are Improved Lecture, Tutorial, Case Method, Group Discussion, Industrial visits, Industrial Training, Field Trips, Portfolio Based, Learning, Role Play, Live Demonstrations in Classrooms, Lab, Field Information and Communications Technology (ICT)Based Teaching Learning, Blended or flipped mode, Brainstorming, Expert Session, Video Clippings, Use of Open Educational Resources (OER), MOOCs etc.

P) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher
1.	Management Information System	S.Sadagopan	Prentice Hall of India New Delhi
2.	Use of MIS Technology in Library Science	M.S. Sodhi	Adhyayan Publishers & Distributors
3.	Management Information System	Gordon B.Davis	McGraw-Hill Publication
4	Library Management and computer	Vijay Singh Rawat	Priya publication New Delhi

(b) Online Educational Resources:

1. <https://ignou.ac.in/>
2. <https://www.inflibnet.ac.in/>
3. <https://www.engranthalaya.nic.in/>
4. <https://epgp.inflibnet.ac.in/>
5. <https://nptel.ac.in/>
6. <https://www.mooc.org/>
7. <https://www.jstor.org/>
8. <https://ndl.iitkgp.ac.in/>
9. <https://www.nic.in/>
10. <https://egyankosh.ac.in/>

Note: Teachers are requested to check the creative commons license status/ financial implications of the suggested, online educational recourses before use by the students.

- A) **Course Code** : **2418305(T2418305/P2418305/S2418305)**
- B) **Course Title** : Python Programming
(CE, CSE, AIML, ME, ME (Auto), ELX, ELX (R), MIE, FTS, CRE, CHE, TE, CACDDM, GT, RE)
- C) **Pre-requisite Course(s)** :
- D) **Rationale** :

Python programming has emerged as a popular programming language across wide range of application segments from Scientific to Machine Learning to mobile app development, and so on. Python is a high-level general-purpose programming language.

Because code is automatically compiled to byte code and executed, Python is suitable as a scripting language, Web application implementation language, etc.

In Python there are multiple levels of organizational structure: functions, classes, modules, and packages. These assist in organizing code. An excellent and large example is the Python standard library.

The Object-oriented Python provides a consistent way to use objects: in Python it is easy to implement new object types (called classes in object-oriented programming).

This introductory course to learn basic Python programming features which can be used as building blocks to develop different kind of applications using Python 3.

- E) **Course Outcomes (COs):** After the completion of the course, teachers are expected to ensure the accomplishment of following course outcomes by the learners. For this, the learners are expected to perform various activities related to three learning domains (Cognitive, Psychomotor and Affective) in classroom/ laboratory/ workshop/ field/ industry.

After completion of the course, the students will be able to-

- CO-1** Use various data types and operators in formation of expressions.
- CO-2** Write and execute programs using control statements.
- CO-3** Perform relevant operations on Sequence data types
- CO-4** Create functions in modules
- CO-5** Use numpy in writing python programs
- CO-6** Handle data files and exceptions.

- F) **Suggested Course Articulation Matrix (CAM):**

Course Outcomes (COs)	Programme Outcomes(POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2
CO-1	1	-	1	-	-	-	-		
CO-2	1	2	2	1	-	1	-		
CO-3	1	2	2	1	-	1	-		
CO-4	1	2	2	1	-	1	2		
CO-5	1	2	2	1	-	1	-		
CO-6	1	2	2	1	-	1	1		

Legend: High (3), Medium (2), Low (1) and No mapping (-)

* PSOs will be developed by respective programme coordinator at institute level. As per latest NBA guidelines, formulating PSOs is optional

G) Teaching & Learning Scheme:

Board of Study	Course Code	Course Title	Scheme of Study (Hours/Week)					
			Classroom Instruction (CI)		Lab Instruction (LI)	Notional Hours (TW+ SL)	Total Hours (CI+LI+TW+SL)	Total Credits (C)
			L	T				
	2418305	Python programming	03	-	04	02	09	06

Note: Prefix will be added to Course Code if applicable (T for theory Paper, P for Practical Paper and S for Term work)

Legend:

CI: Classroom Instruction (Includes different instructional/implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem based learning etc. to deliver theoretical concepts)

LI: Laboratory Instruction (Includes experiments/practical performances /problem-based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)

Notional Hours: Hours of engagement by learners, other than the contact hours for ensuring learning.

TW: Term Work (includes assignments, seminars, micro projects, industrial visits, any other student activities etc.)

SL: Self Learning, MOOCs, spoken tutorials, online educational resources etc.

C: Credits = (1 x CI hours) + (0.5 x LI hours) + (0.5 x Notional hours)

Note: TW and SL have to be planned by the teacher and performed by the learner under the continuous guidance and feedback of teacher to ensure outcome of learning.

H) Assessment Scheme:

Board of Study	Course Code	Course Title	Assessment Scheme (Marks)						Total Marks (TA+TWA+LA)
			Theory Assessment (TA)		Term Work & Self-Learning Assessment (TWA)		Lab Assessment (LA)		
			Progressive Theory Assessment (PTA)	End Theory Assessment (ETA)	Internal	External	Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)	
	2418305	Python programming	30	70	20	30	20	30	200

Note: Prefix will be added to Course Code if applicable (T for theory Paper, P for Practical Paper and S for Term work)

Legend:

PTA: Progressive Theory Assessment in class room (includes class test, mid-term test and quiz using online/offline modes)

PLA: Progressive Laboratory Assessment (includes process and product assessment using rating Scales and rubrics)

TWA: Term work & Self Learning Assessment (Includes assessment related to student performance in assignments, seminars, micro projects, industrial visits, self-learning, any other student activities etc.)

Note:

- ETA & ELA are to be carried out at the end of the term/ semester.
- Term Work is to be done by the students under the guidance of internal faculty but its assessment will be done **internally (40%)** as well as **externally (60%)**. Assessment related to planning and execution of Term Work activities like assignment, micro project, seminar and self-learning is to be done by internal faculty (Internal Assessment) whereas assessment of output/product/ presentation related to these activities will be carried out by external faculty/expert (External Assessment). However, criteria of internal as well as external assessment may vary as per the requirement of respective course. For valid and reliable assessment, the internal faculty should prepare checklist & rubrics for these activities.

I) **Course Curriculum Detailing:** This course curriculum detailing depicts learning outcomes at course level and session level and their attainment by the students through Classroom Instruction (CI), Laboratory Instruction (LI), Term Work (TW) and Self Learning (SL). Students are expected to demonstrate the attainment of Theory Session Outcomes (TSOs) and Lab Session Outcomes (LSOs) leading to attainment of Course Outcomes (COs) upon the completion of the course. While curriculum detailing, NEP 2020 related reforms like green skills, Sustainability, Multidisciplinary aspects, Society connect, Indian Knowledge System (IKS) and others must be integrated appropriately.

J) **Theory Session Outcomes (TSOs) and Units: T2418305**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
<i>TSO 1a.</i> Differentiate between Procedure Oriented P and Object Oriented Programming approach with example. <i>TSO 1b.</i> Use the concept of Lvalue and Rvalue <i>TSO 1c.</i> Write python program using various data types and operators	Unit 1: Fundamentals of Python Programming Syntax 1.1 Introduction to Python Character Set, Python Tokens, Variables, Lvalue and Rvalue Concepts, and the Use of Comments. 1.2 Overview of Data Types: • Number Types: Integer, Floating Point, Complex • Boolean Type • Sequence Types: String, List, Tuple • None Type • Mapping Type: Dictionary • Distinction between Mutable and Immutable Data Types 1.3 Understanding Operators: • Arithmetic Operators • Relational Operators • Logical Operators • Assignment Operator • Augmented Assignment Operators • Expressions and Statements • Type Conversion and Input/Output Mechanisms • Precedence of Operators • Expression Evaluation	CO-1
<i>TSO 2a.</i> Write Python program using decision making statements <i>TSO 2b.</i> Write Python program using loop structure to solve iterative problems	Unit-2.0 Conditional and Iterative statements 2.1 Conditional statements: • simple if statement • if- else statemen • if-elif-else statement 2.2 Iterative statements: • while loop • for loop • range function • break and continue statements • nested loops	CO-2

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
<i>TSO 3a.</i> Perform various operations on string using string operators and methods <i>TSO 3b.</i> Perform various operations on List using list operators and methods <i>TSO 3c.</i> Perform various operations on tuples using tuples operators and methods <i>TSO 3d.</i> Perform various operations on set using set methods <i>TSO 3e.</i> Perform various operations on dictionary using dictionary methods	Unit-3.0 String, List, Tuples, set and Dictionary 3.1 String: - Indexing - string operations (concatenation, repetition, membership & slicing) - traversing a string using loops - built-in functions. 3.2 Lists: - Introduction - Indexing in list - list operations: concatenation, repetition, membership & slicing, traversing a list, built- in list functions, linear search on list of numbers and counting the frequency of elements in a list 3.3 Tuples: Creating, initializing, accessing elements, tuple assignment, performing operations on tuples, tuple methods and built-in functions, nested tuples 3.4 Set: Creating set, traversing, adding, removing data in set, performing set operations like join, Union intersection, difference 3.5 Dictionary: accessing items in a dictionary using keys, mutability of dictionary: adding a new item, modifying an existing item, built-in dictionary functions.	CO-3
<i>TSO 4a.</i> Create and use user defined functions to implement modular programming approach <i>TSO 4b.</i> Differentiate variable scope with example. <i>TSO 4c.</i> Import and use Python modules, libraries	Unit-4.0 Python Functions, Modules and packages 4.1 Functions: types of function (built- in functions, functions defined in module, user defined functions), creating user defined function, arguments and parameters, default parameters, positional parameters, Lambda functions, returning value, scope of a variable: global scope, local scope 4.2 Modules and Packages: Importing module using 'import' Regular Expressions, Exception Handling, PyPI Python Package Index, Pip Python package manager, Importing Libraries and Functions	CO-4
<i>TSO 5a.</i> Write simple Python programs using numpy <i>TSO 5b.</i> Use Numpy array in python program <i>TSO 5c.</i> Use Numpy to solve linear algebra problem.	Unit-5.0 Numpy 5.1 Introduction to NumPy 5.2 Installation of NumPy 5.3 NumPy Arrays: Understanding the NumPy array	CO-5

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
	- The fundamental data structure in NumPy. - Creation of arrays using different methods: np.array(), np.zeros(), np.ones(), etc. - Exploring array attributes like shape, size, and dimensions. 5.4 Array Indexing and Slicing: - Accessing elements and subarrays in NumPy arrays using indexing and slicing. - Demonstration of the difference between one-dimensional and multi-dimensional array indexing. 5.5 Array Operations: - Performing element-wise operations on NumPy arrays. - Exploring universal functions (ufuncs) for mathematical operations. 5.6 Linear Algebra with NumPy: - Introduction to linear algebra operations using NumPy. - Matrix multiplication, determinant, inverse, and solving linear equations. 5.7 File input and output with Numpy 5.8 Broadcasting in Numpy	
<i>TSO 6a.</i> Explain different types of Exceptions in python <i>TSO 6b.</i> Write Python programs for exception handling in Python <i>TSO 6c.</i> Differentiate different modes of file opening. <i>TSO 6d.</i> Perform read, Write, Append operations in files	Unit 6: Exception and File Handling in Python 6.1 Exception Handling: syntax errors, exceptions, need of exception handling, user-defined exceptions, raising exceptions, handling exceptions, catching exceptions, Try - except - else clause, Try - finally clause, recovering and continuing with finally, built-in exception classes. 6.2 File Handling: text file and binary file, file types, open and close files, reading and writing text files, reading and writing binary files, file access modes	CO-6

Note: One major TSO may require more than one Theory session/Period.

K) Suggested Laboratory (Practical) Session Outcomes (LSOs) and List of Practical: P2418305

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
<i>LSO 1.1.</i> Write, execute and debug simple Python program using Integrated Development and Learning Environment (IDLE) <i>LSO 1.2.</i> Write and execute simple 'C' program using variables, arithmetic expressions.	1.	a) Download and Install IDLE. Write and execute Python program to- b) Calculate the Area of a Triangle where its three sides a, b, c are given. $s=(a+b+c)/2$, Area=square root of $s(s-a)(s-b)(s-c)$ (write program without using function) c) Swap Two Variables d) Solve quadratic equation for real numbers.	CO-1
<i>LSO 2.1.</i> Write and execute python programs using conditional statements. <i>LSO 2.2.</i> Write and execute python programs using various types of Loop statements	2.	Write and execute Python program to- a) Check if a Number is Positive, Negative or zero. b) Check whether the given year is a Leap Year. c) Print all Prime Numbers in an Interval. d) Display the multiplication Table based on the given input. e) Print the Fibonacci sequence. f) Find the Factorial of a Number.	CO-2
<i>LSO 3.1.</i> Write and execute Python program to perform various operations on string using string operators and methods	3.	Write and execute Python program to- a) Check whether the string is Palindrome b) Reverse words in a given String in Python c) identify in a strings the name, position and counting of vowels. d) Count the Number of matching characters in a pair of string (set) e) Python program for removing i-th character from a string	CO-2, CO-3
<i>LSO 4.1.</i> Write and execute Python program to perform various operations on List using List operators and methods	4.	Write and execute Python program to- a) find largest number in a given list without using max(). b) find the common numbers from two lists. c) create a list of even numbers and another list of odd numbers from a given list. d) To find number of occurrences of given number without using built-in methods.	CO-2, CO-3
<i>LSO 5.1.</i> Write and execute Python program to perform various operations on Tuple using Tuple operators and methods.	5.	Write and execute Python program to- a) find the index of an item of a tuple. b) find the length of a tuple. c) to reverse a tuple. d) Write a Python program to sort a list of tuple by its float element. Sample data: [('item1', '12.20'), ('item2', '15.10'), ('item3', '24.5')] Expected Output: [('item3', '24.5'), ('item2', '15.10'), ('item1', '12.20')]	CO-2, CO-3

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
<i>LSO 6.1.</i> Write and execute Python program to perform various operations on sets using set methods.	6.	Write and execute Python program to- a) create an intersection of sets. b) create a union of sets. c) create set difference. d) check if two given sets have no elements in common.	CO-2, CO-3
<i>LSO 7.1.</i> Write and execute Python program to perform various operations on Dictionary using Dictionary methods	7.	Write and execute Python program to- a) Write a Python script to concatenate two dictionaries to create a new one b) Write a Python script to merge two Python dictionaries. c) Write a Python program to combine two dictionary adding values for common keys. d1 = {'a': 100, 'b': 200, 'c':300} d2 = {'a': 300, 'b': 200, 'd':400} Sample output: d({'a': 400, 'b': 400, 'd': 400, 'c': 300})	CO-2, CO-3
<i>LSO 8.1.</i> Write and execute Python program to create user defined functions and call them.	8.	Write and execute Python program to- a) Write a Python function for reversing a string and call it. b) Write a Python function for calculating compound interest and call it. c) Write a Python function for calculating the factorial of a number and call it to calculate $n!/(r!*(n-r)!)$ where symbol "!" stands for factorial.	CO-2, CO-4
<i>LSO 9.1.</i> Write and execute Python program to define a numpy array. <i>LSO 9.2.</i> Develop and execute Python program Using various types of Numpy operation.	9.	a) Write a python program to create a Numpy array filled with all zeros b) Write a python program to check whether a Numpy array contains a specified row c) Write a python program to Remove rows in Numpy array that contains non-numeric values d) Write a python program to Find the number of occurrences of a sequence in a NumPy array e) Write a python program to Find the most frequent value in a NumPy array f) Write a python program to Combine a one and a two-dimensional NumPy Array g) Write a python program to Flatten a Matrix in Python using NumPy h) Write a python program to Interchange two axes of an array	CO-2, CO-5
<i>LSO 10.1.</i> Develop and execute Python program to handle various type of exceptions. <i>LSO 10.2.</i> Develop and execute Python program to perform file operations.	10.	a) Using exception handling feature such as try...except, try finally- write minimum three programs to handle following types of exceptions. i. Type Error ii. Name Error	CO-6, CO-1, CO-2,

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
		iii. Index Error iv. Key Error v. Value Error vi. IO Error vii. Zero Division Error b) Write Python program to demonstrate file operations.	

Note: in addition to above listed practical, students are suggested to practice all the examples covered by the teacher during theory sessions.

L) Suggested Term Work and Self Learning: S2418305 Some sample suggested assignments, micro project and other activities are mentioned here for reference.

a. **Assignments:** Questions/Problems/Numerical/Exercises to be provided by the course teacher in line with the targeted COs.

b. **Micro Projects:**

1. Create a shop billing system
 2. Create income tax calculation system.
 3. Develop number guessing game (random integer will be selected by the system and the user has to guess that integer in the minimum number of guesses. Maximum 5 guess allowed.)
 4. Assign numbers to alphabet a-z as (1-26). User will input a word. System will convert it to a number by adding all the individual alphabet of that word.
 5. Design a basic calculator program that performs arithmetic operations like addition, subtraction, multiplication, and division based on user input.
 6. Any other micro-projects suggested by subject faculty on similar line.
- (Students may use file and sequence data types to develop above listed applications)

c. **Other Activities:**

1. Seminar Topics:
 - Tkinter widgets in python
 - Python date/time module and its applications
 - wxPython and its applications

M) Suggested Course Evaluation Matrix: The course teacher has to decide and use appropriate assessment strategy and its weightage in theory, laboratory and Term Work for ensuring CO attainment. The response/performance of each student in each of these designed activities is to be used to calculate **CO attainment**.

COs	Course Evaluation Matrix						
	Theory Assessment (TA)**		Term Work Assessment (TWA)			Lab Assessment (LA)#	
	Progressive Theory Assessment (PTA) Class/Mid Sem Test	End Theory Assessment (ETA)	Term Work & Self Learning Assessment			Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)
			Assignments	Micro Projects	Other Activities*		
CO-1	10%	10%	15%	16%	16%	10%	16%
CO-2	15%	15%	15%	16%	16%	15%	16%

CO-3	25%	25%	20%	18%	18%	25%	18%
CO-4	15%	15%	15%	16%	16%	15%	16%
CO-5	25%	25%	25%	18%	18%	25%	18%
CO-6	10%	10%	10%	16%	16%	10%	16%
Total Marks	30	70	20	20	10	20	30
			50				

Legend:

*: Other Activities include self- learning, seminar, visits, surveys, product development, software development etc.

**: Mentioned under point- (N)

#: Mentioned under point-(O)

Note:

- The percentage given are approximate
- In case of Micro Projects and End Laboratory Assessment (ELA), the achieved marks will be equally divided in all those COs mapped with total experiments.
- For CO attainment calculation indirect assessment tools like course exit survey need to be used which comprises of questions related to achievement of each COs.

N) Suggested Specification Table for End Semester Theory Assessment: Specification table represents the reflection of sample representation of assessment of cognitive domain of full course.

Unit Title and Number	Total Classroom Instruction (CI) Hours	Relevant COs Number(s)	Total Marks	ETA (Marks)		
				Remember (R)	Understanding (U)	Application & above (A)
Unit-1.0 Basics of Python Programming syntax	4	CO-1	7	3	2	2
Unit-2.0 Conditional and Iterative statements	6	CO-2	10	3	3	4
Unit-3.0 3.0 String, List, Tuples, set and Dictionary	12	CO-3	18	5	3	10
Unit-4.0 Python Functions, Modules and packages	7	CO-4	10	3	3	4
Unit-5.0 Numpy	12	CO-5	18	4	5	9
Unit-6.0 Exception and File Handling in Python	7	CO-6	7	2	2	3
Total	48	-	70	20	18	32

Note: Similar table can also be used to design class/mid-term/ internal question paper for progressive assessment.

O) Suggested Assessment Table for Laboratory (Practical):

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
1.	Write and execute Python program to- a) Calculate the Area of a Triangle where its three sides a,b,c are given. $s=(a+b+c)/2$, Area=square root of $s(s-a)(s-b)(s-c)$ (write program without using function) b) Swap Two Variables c) Solve quadratic equation for real numbers.	CO-1	40	50	10
2.	Write and execute Python program to- a) Check if a Number is Positive, Negative or zero. b) Check whether the given year is a Leap Year. c) Print all Prime Numbers in an Interval.	CO-2	40	50	10

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
	d) Display the multiplication Table based on the given input. e) Print the Fibonacci sequence. f) Find the Factorial of a Number.				
3.	Write and execute Python program to- a) Check whether the string is Palindrome b) Reverse words in a given String in Python c) identify in a strings the name, position and counting of vowels. d) Count the Number of matching characters in a pair of string (set) e) Python program for removing i-th character from a string	CO-2, CO3	40	50	10
4.	Write and execute Python program to- a) find largest number in a given list without using max(). b) find the common numbers from two lists. c) create a list of even numbers and another list of odd numbers from a given list. d) To find number of occurrences of given number without using built-in methods.	CO-2, CO-3	40	50	10
5.	Write and execute Python program to- a) find the index of an item of a tuple. b) find the length of a tuple. c) to reverse a tuple. d) Write a Python program to sort a list of tuple by its float element. Sample data: [('item1', '12.20'), ('item2', '15.10'), ('item3', '24.5')] Expected Output: [('item3', '24.5'), ('item2', '15.10'), ('item1', '12.20')]	CO-2, CO-3	40	50	10
6.	Write and execute Python program to- a) create an intersection of sets. b) create a union of sets. c) create set difference. d) check if two given sets have no elements in common.	CO-2, CO-3	40	50	10
7.	Write and execute Python program to- a) Write a Python script to concatenate two dictionaries to create a new one b) Write a Python script to merge two Python dictionaries. c) Write a Python program to combine two dictionary adding values for common keys. d1 = {'a': 100, 'b': 200, 'c':300} d2 = {'a': 300, 'b': 200, 'd':400} Sample output: d({'a': 400, 'b': 400, 'd': 400, 'c': 300})	CO-2, CO-3	40	50	10
8.	Write and execute Python program to- a) Write a Python function for reversing a string and call it. b) Write a Python function for calculating compound interest and call it.	CO-2, CO-4	40	50	10

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
	c) Write a Python function for calculating the factorial of a number and call it to calculate $n/(n-r)!$ where symbol "!" stands for factorial.				
9.	a) Write a python program to create a Numpy array filled with all zeros b) Write a python program to check whether a Numpy array contains a specified row c) Write a python program to Remove rows in Numpy array that contains non-numeric values d) Write a python program to Find the number of occurrences of a sequence in a NumPy array e) Write a python program to Find the most frequent value in a NumPy array f) Write a python program to Combine a one and a two-dimensional NumPy Array g) Write a python program to Flatten a Matrix in Python using NumPy Write a python program to Interchange two axes of an array	CO-2, CO-5	40	50	10
h)	Using exception handling feature such as try...except, try finally-write minimum three programs to handle following types of exceptions. viii. TypeError ix. NameError x. IndexError xi. KeyError xii. ValueError xiii. IOError xiv. ZeroDivisionError	CO-2, CO-6	40	50	10
i)	Write and execute Python program to- a) Calculate the Area of a Triangle where its three sides a,b,c are given. $s=(a+b+c)/2$, Area=square root of $s(s-a)(s-b)(s-c)$ (write program without using function) b) Swap Two Variables c) Solve quadratic equation for real numbers.	CO-1	40	50	10

Legend:

PRA*: Process Assessment

PDA**: Product Assessment

Note: This table can be used for both end semester as well as progressive assessment of practical. Rubrics need to be prepared by the course teacher for each experiment/practical to assess the student performance.

P) Suggested Instructional/Implementation Strategies: Different Instructional/ Implementation Strategies may be appropriately selected, as per the requirement of the content/outcome. Some of them are Improved Lecture, Tutorial, Case Method, Group Discussion, Industrial visits, Industrial Training, Field Trips, Portfolio Based, Learning, Role Play, Live Demonstrations in Classrooms, Lab, Field Information and Communications Technology (ICT)Based Teaching Learning, Blended or flipped mode, Brainstorming, Expert Session, Video Clippings, Use of Open Educational Resources (OER), MOOCs etc.

Q) List of Major Laboratory Equipment, Tools and Software:

S. No.	Name of Equipment, Tools and Software	Broad Specifications	Relevant Experiment/Practical Number
1.	Computer system	Processor Intel Core i5, 4 GB RAM, 15 GB free disk space	All
2.	Integrated Development and Learning Environment (IDLE)	S/w to be downloaded for python 3.11.3 or higher	All

R) Suggested Learning Resources:**(a) Books:**

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	Introduction to Computing and Problem-Solving using Python	E. Balagurusamy	McGraw Hill Education (India) Pvt. Ltd. 1 st Edition /2016
2.	Learning Python Programming	Jeffrey Elkner, Allan B. Downey, Chris Meyers	Samurai Media Limited. 2016
3.	Python Programming	Ashok Namdev Kamthane and Amit Ashok Kamthane	McGraw Hill Education (India) Pvt. Ltd. 2020, 2 nd Edition
4.	Programming in Python	Dr. Pooja Sharma	BPB Publications 2017

(b) Online Educational Resources:

1. <https://docs.python.org/3/tutorial/>
2. <https://www.w3schools.com/python/>
3. <https://www.tutorialspoint.com/python/index.htm>

Note: Teachers are requested to check the creative commons license status/ financial implications of the suggested, online educational resources before use by the students.

- A) **Course Code** : **2400008 (P2400008/S2400008)**
 B) **Course Title** : Sports, Yoga and Meditation (Common for all Programmes)
 C) **Pre- requisite Course(s)** :
 D) **Rationale**

Sports or Physical Education, Yoga and Meditation is an integral part of a person's overall well-being and is imperative for a healthy mind and body balance. So, it is necessary that every educational institutes should lay ample emphasis on including sports, yoga and meditation as a necessary part of education, however, it depends on how it is introduced in the curriculum makes all the difference. Sports, Yoga and Meditation plays a very important role in overall Well-being for a good personality, develops value system, sense of friendliness, feeling of togetherness thereby developing team spirit and mutual cooperation. Its also plays a major role in reducing level of stress/anxiety and add to the mental toughness. Looking to the ample benefits there is need to inculcate sports, Yoga and meditation as a day to day habit and imparting education related to physical education is more critical than ever before.

- E) **Course Outcomes (COs):** After the completion of the course, teachers are expected to ensure the accomplishment of following course outcomes by the learners. For this, the learners are expected to perform various activities related to three learning domains (Cognitive, Psychomotor and Affective) in classroom/ laboratory/ workshop/ field/ industry.

After completion of the course, the students will be able to-

CO-1 Select appropriate physical activities to maintain healthy lifestyle.

CO-2 Apply basic principles and practices of Yoga and meditation for overall growth & development.

CO-3 Use fitness and wellness techniques for optimal health and wellbeing

- F) **Suggested Course Articulation Matrix (CAM):**

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Developm entof Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Managem ent	PO-7 Life Long Learning	PSO-1	PSO-2
CO-1	3	3	3	-	1	-	2		
CO-2	3	3	3	-	1	-	2		
CO-3	3	3	3	-	1	-	2		

Legend: High (3), Medium (2), Low (1) and No mapping (-)

* PSOs will be developed by respective programme coordinator at institute level. As per latest NBA guidelines, formulating PSOs is optional

G) Teaching & Learning Scheme:

Board of Study	Course Code	Course Title	Scheme of Study (Hours/Week)					
			Classroom Instruction (CI)		Lab Instruction (LI)	Notional Hours (TW+ SL)	Total Hours (CI+LI+TW+SL)	Total Credits (C)
			L	T				
	2400008	Sports, Yoga and Meditation	-	-	01	01	02	01

Legend:

CI: Classroom Instruction (Includes different instructional/implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem based learning etc. to deliver theoretical concepts)

LI: Laboratory Instruction (Includes experiments/practical performances /problem-based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)

Notional Hours: Hours of engagement by learners, other than the contact hours for ensuring learning.

TW: Term Work (includes assignments, seminars, micro projects, industrial visits, any other student activities etc.)

SL: Self Learning, MOOCs, spoken tutorials, online educational resources etc.

C: Credits = (1 x CI hours) + (0.5 x LI hours) + (0.5 x Notional hours)

Note: TW and SL have to be planned by the teacher and performed by the learner under the continuous guidance and feedback of teacher to ensure outcome of learning.

H) Assessment Scheme:

Board of Study	Course Code	Course Title	Assessment Scheme (Marks)						Total Marks (TA+TWA+LA)
			Theory Assessment (TA)		Term Work & Self-Learning Assessment (TWA)		Lab Assessment (LA)		
			Progressive Theory Assessment (PTA)	End Theory Assessment (ETA)	Internal	External	Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)	
	2400008	Sports, Yoga and Meditation	-	-	10	-	06	09	25

Legend:

PTA: Progressive Theory Assessment in class room (includes class test, mid-term test and quiz using online/offline modes)

PLA: Progressive Laboratory Assessment (includes process and product assessment using rating Scales and rubrics)

TWA: Term work & Self Learning Assessment (Includes assessment related to student performance in assignments, seminars, micro projects, industrial visits, self-learning, any other student activities etc.)

Note:

- ETA & ELA are to be carried out at the end of the term/ semester.
- Term Work is to be done by the students under the guidance of internal faculty but its assessment will be done **internally (40%)** as well as **externally (60%)**. Assessment related to planning and execution of Term Work activities like assignment, micro project, seminar and self-learning is to be done by internal faculty (Internal Assessment) whereas assessment of output/product/presentation related to these activities will be carried out by external faculty/expert (External Assessment). However, criteria of internal as well as external assessment may vary as per the requirement of respective course. For valid and reliable assessment, the internal faculty should prepare checklist & rubrics for these activities.

- I) **Course Curriculum Detailing:** This course curriculum detailing depicts learning outcomes at course level and session level and their attainment by the students through Classroom Instruction (CI), Laboratory Instruction (LI), Term Work (TW) and Self Learning (SL). Students are expected to demonstrate the attainment of Theory Session Outcomes (TSOs) and Lab Session Outcomes (LSOs) leading to attainment of Course Outcomes (COs) upon the completion of the course. While curriculum detailing, NEP 2020 related reforms like Green skills, Sustainability, Multidisciplinary aspects, Society connect, Indian Knowledge System (IKS) and others must be integrated appropriately.

J) **Theory Session Outcomes (TSOs) and Units:**

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
<i>TSO.1a</i> Differentiate between given terms used in sports <i>TSO.1b</i> Discuss the different aspects of Mental Toughness <i>TSO.1c</i> Use Imagery Training for sports <i>TSO.1d</i> Apply motivation techniques to motivate students in sports. <i>TSO.1e</i> Use concentration techniques for playing and exercising. <i>TSO.1f</i> Manage Stress, Anxiety and Arousal during sports. <i>TSO.1g</i> Select sports and exercise for healing and developing health and mental wellness <i>TSO.1h</i> Discuss the impact of parents' involvement in their children's sports activities <i>TSO.1i</i> Select sports and exercises for physically challenged as per their need.	Unit-1.0 Sports and Exercises 1.1 Definition of play, game, sports, exercise, psychology, sports psychology and exercise psychology, psychology and common sense. 1.2 Mental toughness- mind, Imagery, use of imagery and imagery in sports, types of imagery (visual, kinesthetic, auditory and olfactory) 1.3 Motivation in sport and goalsetting in sports 1.4 Arousal regulation – self-awareness of regulation, anxiety reduction techniques- somatic anxiety reduction techniques, cognitive Anxiety reduction, multimodal anxiety reduction, coping with stress. Arousal - inducing techniques. Arousal and anxiety measurement factors, Arousal and anxiety signs recognition 1.5 Nutrition and rehabilitation, Importance of concentration and attentional focus in sports and training, Impact of health on healing from physical athletic injuries. Impact of exercise to increase mental wellness, Role of coach in sports, parents' involvement in their children's sports activities. 1.6 Adaptation of sports and exercises for physically challenged students in all levels.	CO1
<i>TSO.2a</i> Identify the physiology of yoga and meditation. <i>TSO.2b</i> Evaluate meditation and yoga as a healing modality. <i>TSO.2c</i> Select asanas and pranayama as per need. <i>TSO.2d</i> Discuss the effect of yoga and meditation on ageing, stress and hypertension. <i>TSO.2e</i> Select mediation techniques as per the need. <i>TSO.2f</i> Discuss Bandha, Mudra and Chakra <i>TSO.2g</i> Discuss the steps of Suryanamaskar. <i>TSO.2h</i> Select Yoga and Meditation for physically challenged as per their need.	Unit-2.0 Yoga and Meditation 2.1 Importance of Yoga & Meditation in daily life, Definition and meaning of the term Yoga and Meditation, Fundamentals Principles of Yoga & Fitness training 2.2 Difference between yoga asana and physical exercises, Difference between yoga and meditation 2.3 Role of Yoga and Meditation in Purificatory Process, in character building, developing concentration, will power and discipline 2.4 Types of Yoga Practices - Asanas, Pranayama, Meditation 2.5 Mindfulness – knowing the mind, training the mind, feeling the mind 2.6 Different Methods of meditation, Physiology of meditation, Mental, physical and emotional benefits of Asanas, Pranayama, Concentration and Meditation 2.7 Bandha, Mudra and Chakra 2.8 Effects of Asanas and pranayama on	CO2

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
	physiology of human body 2.9 Importance of "Suryanamaskar" 2.10 Adaptation of Yoga and meditations for physically challenged students in all levels. 2.11 Yoga Asanas Do's and Don'ts for Beginners	
<i>TSO.3a</i> Identify the different factors affecting the fitness and wellness in the given situation <i>TSO.3b</i> Use different methods to maintain Health and Wellness <i>TSO.3c</i> Discuss the components of Balance Diet <i>TSO.3d</i> Identify the causes of stress and anxiety in the given situation <i>TSO.3e</i> Use stress reduction techniques to manage Stress and Anxiety <i>TSO.3f</i> Manage Stress, Anxiety and Depression in the given situation <i>TSO.3g</i> Select recovery process for energy replenishment after exercise.	Unit 3.0 Fitness and Wellness 3.1 Meaning, Importance, Definition and dimensions of Health and Wellness (WHO/Yoga) 3.2 Factors affecting Fitness and Wellness 3.3 Role of Physical Activities and Recreational Games in maintaining physiological and psychological wellbeing. 3.4 Different Methods to Maintain Health, Wellness and to enhance mood 3.5 Nutrition for Health & Wellness, Relationship between Diet and Fitness Components of Balance Diet and its importance – Carbohydrates, Protein, Fat, Vitamins & Minerals, Water, Healthy Lifestyle through Diet and Fitness 3.6 Anxiety, Stress and Aging-Meaning of Anxiety, Stress and Aging, Types and Causes of Stress, 3.7 Stress, anxiety and depression reduction with exercise, yoga and meditation 3.8 Energy Continuum and Recovery Process, Metabolism and exercise, Recovery from exercise, Replenishment of energy stores during recovery process, Removal of excess lactic acid produced during exercise	CO3

Note: One major TSO may require more than one Theory session/Period.

K) Suggested Laboratory (Practical) Session Outcomes (LSOs) and List of Practical: P2400008

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
<i>LSO 1.1.</i> Perform various sports activities for overall growth and development <i>LSO 1.2.</i> Select suitable sport activities as per your need.	1.	Track & Field: Running, Jumping, walking and Throwing, Cycling Event to develop Endurance, Speed, Strength, Agility, Flexibility etc	CO1
	2.	Aerobics and Gymnastics to develop Strength, Agility and Flexibility	
	3.	Net/Wall Sports – Volleyball and Basketball to develop Endurance, Speed, Strength, Agility and Flexibility	
	4.	Striking & Fielding sports like Cricket, bowling, Hockey, Football Baseball etc. to develop Endurance, Speed, Strength, Agility, Flexibility and Coordination	
	5.	Racket Game- Tennis, Badminton, Table tennis etc to develop Endurance, Speed, Strength, Agility and Flexibility	
	6.	Outdoor games: Kho-Kho and Kabaddi and cycling develop Endurance, Speed, Strength, Agility and Flexibility	
	7.	Indoor games: Chess and Carrom, Swimming, Boxing, Karate Weightlifting, Power Lifting, Physique Training, Archery, Roller Skating etc to develop concentration.	

Practical/Lab Session Outcomes (LSOs)	S. No.	Laboratory Experiment/Practical Titles	Relevant COs Number(s)
	8.	Prepare and organize Adapted Sports for various levels of physically challenged and impairments.	
LSOs 2.1 Perform various yogic techniques for internal purification and development.	9.	Shat Karmas: Tratakam, Jala-Neti, Sutra-Neti, Vamana Dhauti, Danda Dhauti, Agnisara, Nauli	CO2
	10.	Perform following asanas with correct posture: Ardha-Padmasana [virasana], Ardha-Halasana, Pavana-Muktasana, Naukasana, Ardha-shalabhasana, Shalabhasana, Makarasan, Bhujangasana, Dhanurasana	
	11.	Perform following asnas with correct posture: Vakrasana, Chakrasana, Paschimottanasana, Ugrasana, Gomukha sana, Padmasana, Siddhasana, Bhadrasana, Swastikkasana, Vajrasana, Supta-Vajrasana, Yoga-Mudra	
	12.	MUDRAS & SURIYANAMASKAR Brahma-Mudra, Simha-Mudra, Shanmugi Mudra, Viparithakarani-Mudra, Ashwsini-Mudra, Suriyanamaskar	
	13.	BANDHAS Jalandhara-Bandha, Jihva-Banda, Uddiyana Bandha, Moola-Bandha	
	14.	PRANAYAMAS Nadi-Shuddhi, Nadi-Shodhana, Suryabhadana, Ujjayi, Bhastrika Pranayama, Bhramari Pranayama, Sitkari, Sitali, Kapalabhati	
	15.	MEDITATION -Silent Meditation	
	16.	MEDITATION – Mantra Meditation	
LSO 3.1. Prepare diet chart for optimal health and wellbeing	17.	Prepare a diet chart for the given sport.	CO3
LSO 3.2. Use health monitoring device	18.	Measure heart rate and heart function with health monitoring device	
	19.	Measure blood sugar and blood pressure	
LSO 3.3. Use different equipment's	20.	Use massage therapy equipment, Hot and cold therapy equipment, Ultrasound therapy equipment	
LSO 3.4. Identify your own threshold and identification level for different taste Stimulations	21.	Determine the taste threshold for three different sensations- sweet salty and sour	
LSO 3.5. Check the given sample for conformance to the standard for moisture content.	22.	Determine the moisture content in the given sample of oil/fat	
LSO 3.6. Purity tests of oils/fats	23.	Determine the impurities in the given sample of oil.	
LSO 3.7. Acidity test in given sample of fat/oil	24.	Determines the acid value and free fatty acids in the given sample of oil/fat.	
LSO 3.8. Check whether any given samples of oils/fats conform to the standard.	25.	Determine the peroxide value in the given sample of fat or oil.	

- L) **Suggested Term Work/ Activities and Self Learning: S2400008** Some sample suggested assignments, micro project and other activities are mentioned here for reference.
- a. **Assignments:** Questions/Problems/Numerical/Exercises to be provided by the course teacher in line with the targeted COs.
- Calculate your Body Composition (BMI) and Cardiovascular Assessment
 - Assessment for Muscular Endurance, Muscular Strength,
 - Flexibility, Cardio-respiratory Endurance, Body Composition
 - Rules and Regulations of different indoor and outdoor games.
- b. **Micro Projects:**
- Identify and synthesize the factors that influence health in various situations (05 situations). Prepare a report with details of situations and solutions to remove the factors.
 - Visit different sports club, gyms, and schools and identify various measure taken by them for Fitness and wellness of students/ members
 - Visit different sports club, gyms, and schools and identify various measure taken by them for Fitness and wellness of physically challenged students/ members
 - Identify which type of stress, anxiety and depression students are facing and steps and solutions to overcome this.
- c. **Other Activities:**
1. Seminar Topics:
 - Identify the health-related challenges in current time and able to apply the preventive measures.
 - Role of peers, community and media in health and wellbeing in each level
 - Knowledge and skills required to preserve community health and well-being
 - Effect of yoga and meditation in maintaining fitness.
 - Methods to involve physically challenged students /members in all levels in sports, yoga and meditation in community.
 - Counselling techniques to counsel players in matters of handling success and failure.
 2. Visits: Visit nearby sports complex, Gyms, stadium etc and prepare a report on hygiene maintenance, medical facilities available, facilities available for physically challenged members, facilities available for old aged members, tools and equipment available and training facilities.
 3. **Self-learning topics:**
 - Anatomy and physiology of human being
 - Role of Yoga and Meditation in Purificatory Process, in character building, developing concentration, will power and discipline
 - Mindfulness
 - Different Methods to Maintain Health, Wellness and to enhance mood
 - Diet and Nutrition
 - Metabolic adaptations to exercise
 - Cardio-respiratory changes

- M) Suggested Course Evaluation Matrix:** The course teacher has to decide and use appropriate assessment strategy and its weightage in theory, laboratory and Term Work for ensuring CO attainment. The response/performance of each student in each of these designed activities is to be used to calculate **CO attainment**.

COs	Course Evaluation Matrix						
	Theory Assessment (TA)**		Term Work Assessment (TWA)			Lab Assessment (LA)#	
	Progressive Theory Assessment (PTA) Class/Mid Sem Test	End Theory Assessment (ETA)	Term Work & Self Learning Assessment			Progressive Lab Assessment (PLA)	End Laboratory Assessment (ELA)
			Assignments	Micro Projects	Other Activities*		
CO-1	-	-	35%	35%	35%	35%	35%
CO-2	-	-	35%	35%	35%	35%	35%
CO-3	-	-	30%	30%	30%	30%	30%
Total Marks	-	-	10	10	05	10	15
			25				

Legend:

*: Other Activities include self- learning, seminar, visits, surveys, product development, software development etc.

**: Mentioned under point- (N)

#: Mentioned under point-(O)

Note:

- The percentage given are approximate
- In case of Micro Projects and End Laboratory Assessment (ELA), the achieved marks will be equally divided in all those COs mapped with total experiments.
- For CO attainment calculation indirect assessment tools like course exit survey need to be used which comprises of questions related to achievement of each COs.

N) Suggested Specification Table for End Semester Theory Assessment: (Not Applicable)

O) Suggested Assessment Table for Laboratory (Practical):

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
1.	Track & Field: Running, Jumping, walking and Throwing, Cycling Event to develop Endurance, Speed, Strength, Agility, Flexibility etc	CO1	30	60	10
2.	Aerobics and Gymnastics to develop Strength, Agility and Flexibility		30	60	10
3.	Net/Wall Sports – Volleyball and Basketball to develop Endurance, Speed, Strength, Agility and Flexibility		30	60	10
4.	Striking & Fielding sports like Cricket, bowling, Hockey, Football Baseball etc. to develop Endurance, Speed, Strength, Agility, Flexibility and Coordination		30	60	10
5.	Racket Game- Tennis, Badminton, Table tennis etc to develop Endurance, Speed, Strength, Agility and Flexibility		30	60	10
6.	Outdoor games: Kho-Kho and Kabaddi and cycling develop Endurance, Speed, Strength, Agility and Flexibility		30	60	10
7.	Indoor games: Chess and Carrom, Swimming, Boxing, Karate Weightlifting, Power Lifting, Physique Training, Archery, Roller Skating etc to develop concentration.		30	60	10
8.	Prepare and organize Adapted Sports for various levels of physically challenged and impairments.		30	60	10
9.	Shat Karmas Tratakam, Jala-Neti, Sutra-Neti, Vamana Dhauti, Danda Dhauti, Agnisara, Nauli	CO2	40	50	10

S. No.	Laboratory Practical Titles	Relevant COs Number(s)	PLA/ELA		
			Performance		Viva-Voce (%)
			PRA* (%)	PDA** (%)	
10.	Perform following asanas with correct posture: Ardha-Padmasana [virasana], Ardha-Halasana, Pavana-Muktasana, Naukasana, Ardha-shalabhasana, Shalabhasana, Makarasan, Bhujangasana, Dhanurasana		40	50	10
11.	Perform following asanas with correct posture: Vakrasana, Chakrasana, Paschimottanasana, Ugrasana, Gomukhasana, Padmasana, Siddhasana, Bhadrasana, Swastikasana, Vajrasana, Supta-Vajrasana, Yoga-Mudra		40	50	10
12.	MUDRAS & SURIYANAMASKAR Brahma-Mudra, Simha-Mudra, Shanmugi Mudra, Viparithakarani-Mudra, Ashwini-Mudra, Suriyanamaskar		40	50	10
13.	BANDHAS Jalandhara-Bandha, Jihva-Bandha, Uddiyana Bandha, Moola-Bandha		40	50	10
14.	PRANAYAMAS Nadi-Shuddhi, Nadi-Shodhana, Suryabhadana, Ujjayi, Bhastrika Pranayama, Bhramari Pranayama, Sitkari, Sitali, Kapalabhati		40	50	10
15.	MEDITATION - Silent Meditation		40	50	10
16.	MEDITATION - Mantra Meditation		40	50	10
17.	Prepare a diet chart for the given sport.	CO3	40	50	10
18.	Measure heart rate and heart function with health monitoring device		40	50	10
19.	Measure blood sugar and blood pressure		40	50	10
20.	Use massage therapy equipment, Hot and cold therapy equipment, Ultrasound therapy equipment		40	50	10
21.	Determine the taste threshold for three different sensations- sweet salty and sour		40	50	10
22.	Determine the moisture content in the given sample of oil/fat		40	50	10
23.	Determine the impurities in the given sample of oil.		40	50	10
24.	Determines the acid value and free fatty acids in the given sample of oil/fat.		40	50	10
25.	Determine the peroxide value in the given sample of fat or oil.		40	50	10

Note: -All the above Games can be selected from the list of SGFI/AIU/IOA

Legend:

PRA*: Process Assessment

PDA**: Product Assessment

Note: This table can be used for both end semester as well as progressive assessment of practical. Rubrics need to be prepared by the course teacher for each experiment/practical to assess the student performance.

P) Suggested Instructional/Implementation Strategies: Different Instructional/ Implementation Strategies may be appropriately selected, as per the requirement of the content/outcome. Some of them are Improved Lecture, Tutorial, Case Method, Group Discussion, Industrial visits, Industrial Training, Field Trips, Portfolio Based, Learning, Role Play, Live Demonstrations in Classrooms, Lab, Field Information and Communications Technology (ICT) Based Teaching Learning, Blended or flipped mode, Brainstorming, Expert Session, Video Clippings, Use of Open Educational Resources (OER), MOOCs etc.

Q) List of Major Laboratory Equipment, Tools and Software:

S. No.	Name of Equipment, Tools and Software	Broad Specifications	Relevant Experiment/ Practical Number
1.	High end computers for record keeping	Processor Intel Core i7 with Open GL Graphics Card, RAM 32 GB, DDR3/DDR4, HDD 500 GB, Graphics Card NVIDIA OpenGL 4 GB, OS Windows 10	All
2.	Aerobics and Gymnastic	Basic facilities and equipment's – Balance Beams, Gymnastic Ball, Gymnastic Chalk, Gymnastic Clubs, Flex Floor Systems, High Bars, Hoops, Horizontal Bars, Leotards, Music, Parallel Bar, Pommel Horses, Ribbons, Rings, Ropes, Single Bar Trainer, Spotting Blocks, Streamers, Trampoline, Tumble Track, Uneven Bar, Vault, Vault Spring Board Gymnastic Accessories – Chalk, Grips, Wrist Supports, Mat, Tape, Socks Singlets, Pants Shoes, Shorts Aerobics- Resistance bands, Jump rope, Step bench or box, Abdominal wheel, Exercise mat, Gliding discs, dumbbells, fitness trampolines, hoops	2
3.	Striking & Fielding sports	Complete Cricket Kit, Football Kit, Bowling Kit, Hockey Kit	4
4.	Net/Wall Sports	Complete Volley Ball and basketball kit	3
5.	Racket Game	Complete Tennis Kit, Table Tennis Kit and badminton kit	5
6.	Outdoor games	Complete Kho-Kho and Kabaddi and cycling kit	6
7.	Indoor games	Complete Chess kit, Carrom kit, Swimming kit, Boxing kit, Karate kit, Weightlifting kit, Power Lifting kit, Archery kit and Roller-Skating kit	7
8.	Physique Training	Cardio Machines- Treadmills, Elliptical Trainers, Exercise Bikes, Rowing Machines, Indoor Bikes, Vibration Machines, Steppers Recumbents Dumbbells, Multi-Purpose Bench, power rack, Adjustable Dumbbell Set 2 x 3-10 kg, Exercise mat, resistance band, balance trainer	7
9.	Sports and wellbeing equipment's for physically challenged and impairments.	Fusion Wheel – all-in-one portable wheelchair gym, Pedal exerciser, Deluxe hand exerciser, Gripper sports shoelaces, Active Hands, Ramble Tag Guidance Aid, Cat Tongue Grip Tape Adaptive Cycling - Straps, Leg/ Foot Adapters, Prosthetics, Steering Dampener, Handlebar Adapters, HANDCYCLING-Wheelchairs, Bike-On Handcycles, Trikes, Racing Wheelchairs, Trikes, Recumbent Bikes, All-terrain Handcycles, Mono Cycling, Hand Bikes - Off-Road, Cross Country, Racing, Downhill Archery - Field Tripod and Quad Mounts (Archery & Gun), In-Line Draw-Loc, Mounts (Archery & Gun), Stands (Gun), Mounts (Archery & Gun) Binoculars and Rests (Gun), Crossbows (Archery), Wheelchair Platform Stabilizing Crutch Poles, Dampeners, Crossbows (Archery), Hands free shooting rest (Gun) Bowling: ramp, roll assist Fitness : Anti-Gravity Treadmill, LapMat for Wheelchairs, Strike Assist, Adaptive Treadmill	8
10.	Yoga	Yoga Mats, Yoga Rollers, Yoga Blocks, Aero Yoga Clothing Blankets, cloth Straps, Bolsters, Wheels	9-16
11.	Fitness and wellbeing equipment's	Health monitoring devices for overall health- Personal health monitor for heart health, Blood sugar monitoring device, Wireless blood pressure device, Smart watch to track heart function, Hot and cold therapy equipment, Massage therapy equipment, Ultrasound therapy equipment	18-20

S. No.	Name of Equipment, Tools and Software	Broad Specifications	Relevant Experiment/ Practical Number
12.	Taste kit -To test three different sensations-sweet salty and sour	Salt solution (%) -0.5, 0.8, 1.0, 1.2, 1.5, Sugar solution (%) - 0.05, 0.5, 0.7, 1.0, 1.2, Citric acid (%) - 0.02, 0.04, 0.1, 0.5, 1.0 Spoons, Bowls, Beakers, Plain distilled water	21
13.	Test kit to measure peroxide value in the oil	Reagents: Acetic acid-chloroform solution, Saturated potassium iodide solution, Sodium thiosulphate solution- 0.1 N, Starch solution (1%) Apparatus: Pipette 1ml capacity, Conical flask	25
14.	Test kit to measure acid value and free fatty acids in the oil	Sample of oil/fats namely any refined oil or hydrogenated fat. Reagents - ethyl alcohol (95%), phenolphthalein indicator solution, standard aqueous sodium or potassium hydroxide solution (0.1 N or 0.5 N), Pipette (10 ml), Conical flask	24
15.	Test kit to measure impurities in the oil	Sample of Oil/fat, Oven-electric, maintained at $100 \pm 1^{\circ}\text{C}$., Desiccator, Weighing balance, Filter paper	23
16.	Test kit to measure moisture content in the oil	Sample of oil/fat, Moisture dish-made of porcelain, silica, glass or aluminum, Oven-electric, maintained at $105 \pm 1^{\circ}\text{C}$., Desiccator Weighing balance	22

R) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher with ISBN
1.	Practical Applications in Sports Nutrition	Heather Hedrick Fink, Alan E. Mikesky	Jones & Bartlett Learning (2020) ISBN No: 978-1284181340
2.	Massage and Medical Gymnastics,	Lace, M. V.	London: J & A Churchill Ltd. ASIN: B000RY4YB0
3.	ACSM's Guidelines for Exercise Testing and Prescription	Gary Liguori	LWW; (2021) ISBN-13: 978-1975150198
4.	Essentials of Strength Training and Conditioning	Javair Gillett	Human Kinetics, (2021) ISBN-13: 978-1718210868
5.	Practical Applications in Sports Nutrition	Heather Hedrick Fink, Alan E. Mikesky	Jones & Bartlett Learning, (2017) ISBN-13: 978-1284101393
6.	Health Fitness Management	Mike Bates, Mike Spezzano, Guy Danhoff	Human Kinetics, (2019) ISBN-13: 978-1450412230
7.	Yoga for Every Body: A beginner's guide to the practice of yoga postures, breathing exercises and meditation	Luisa Ray, Angus Sutherland	Vital Life Books (2022) ISBN-13: 978-1739737009
8.	Science of Yoga: Understand the Anatomy and Physiology to Perfect Your Practice	Ann Swanson	DK Publisher, (2019) ISBN-13: 978-1465479358
9.	Mudras for Modern Living: 49 inspiring cards to boost your health, enhance your yoga and deepen your meditation Cards	Swami Saradananda	Watkins Publishing (2019) ISBN-13: 978-1786782786
10.	Principles and Methods of Adapted Physical Education & Recreation	Kristi Roth, Laurie Zittel, Jean Pyfer, David Auxter	Jones & Bartlett Learning, (2016) ISBN-13: 978-1284077810
11.	Adapted Physical Education and Sport Sixth Edition	Joseph P. Winnick, David L. Porretta	Human Kinetics, (2016) ISBN-13: 978-1492511533
12.	Counselling Skills in Applied Sport Psychology: Learning How to Counsel	Paul McCarthy, Zoe Moffat	Routledge, (2023) ISBN-13: 978-1032592589
13.	Basic Counselling Skills: A Helper's Manual	Richard Nelson Jones	Sage Publication 2012, New Delhi.
14.	Advancements in Mental Skills Training (ISSP Key Issues in Sport and Exercise Psychology)	Maurizio Bertollo, Edson Filho, Peter Terry	Routledge, (2020) ISBN-13: 978-0367111588

S. No.	Titles	Author(s)	Publisher with ISBN
15.	The Relaxation and Stress Reduction Workbook	Martha Davis, Elizabeth Robbins, Matthew McKay, Eshelman MSW	A New Harbinger Self-Help Workbook (2019)
16.	Patanjalis Yoga Sutras	Swami Vivekananda	Fingerprint Publishing (2023) Prakash Books India Pvt Ltd, New Delhi ISBN-13: 978-9354407017

(b) Online Educational Resources:

1. https://onlinecourses.swayam2.ac.in/aic19_ed28/preview- introduction to Yoga and Applications of Yoga
2. https://onlinecourses.swayam2.ac.in/aic23_ge09/preview- Yoga for Creativity
3. https://onlinecourses.swayam2.ac.in/aic23_ge05/preview- Yoga for concentration
4. https://onlinecourses.swayam2.ac.in/aic23_ge06/preview- yoga for memory development
5. https://onlinecourses.nptel.ac.in/noc21_hs29/preview-Psychology of Stress, Health and Well-being
6. https://onlinecourses.swayam2.ac.in/nce19_sc04/preview- Food Nutrition for Healthy Living - Course – Swayam
7. <https://www.classcentral.com/course/swayam-fitness-management-17608- Fitness Management from Swayam>
8. https://onlinecourses.swayam2.ac.in/nce19_sc04/preview-Food Nutrition for Healthy Living
9. https://onlinecourses.swayam2.ac.in/cec21_ed02/preview Health Education and Recreation
10. https://onlinecourses.swayam2.ac.in/cec22_ed31/preview Sports Administration and Management

Note: Teachers are requested to check the creative commons license status/ financial implications of the suggested, online educational resources before use by the students.

(c) Others:

1. <https://www.yogajournal.com/yoga-101/philosophy/good-read>
2. <http://hdl.handle.net/123456789/38171- Yoga Philosophy>
3. <https://yoga.ayush.gov.in>

- A) **Course Code** : 2400009 (T2400009)
- B) **Course Title** : Open Educational Resources (OER) (Non-Exam Course) (Cisco/KYP/ST)
(FTS, CHE, CSE, EE, ME, ME (Auto), MIE, ELX, AIML, CRE, CACDDM, FPP, GT, EV-T)
- C) **Pre- requisite Course(s)** :
- D) **Rationale** :

Open educational resources (OER) are openly-licensed, freely available educational materials that can be modified and redistributed by users. Learning about Open Educational Resources (OER), copyright, and Creative Commons licenses is a valuable endeavor for content creators, users, and anyone interested in sharing knowledge and creative works. Creative Commons licenses, offer a standardized way to grant permissions for the use and sharing of creative works. Learning about OER, copyright, and Creative Commons licenses is an ongoing process. As these fields evolve, it's important to stay informed and continue exploring new resources and practices.

After going through this course, students will at first place have reasonable idea to explore and use various OERs useful for their course of study and secondly, be motivated for fair use of resources available to them on various platform by understanding the restrictions and legal issues related to copyright and other licensing policies.

- E) **Course Outcomes (COs):** After the completion of the course, teachers are expected to ensure the accomplishment of following course outcomes by the learners. For this, the learners are expected to perform various activities related to three learning domains (Cognitive, Psychomotor and Affective) in classroom/ laboratory/ workshop/ field/ industry.

After completion of the course, the students will be able to-

- CO-1** Use Open Educational Resources (OER) after their evaluation
- CO-2** Use copyright material appropriately.
- CO-3** Implement suitable Creative Common License.

F) **Suggested Course Articulation Matrix (CAM):**

Course Outcomes (COs)	Programme Outcomes(POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2
CO-1	-	2	-	-	3	-	3		
CO-2	-	2	-	-	3	-	3		
CO-3	-	3	-	-	3	-	3		

Legend: High (3), Medium (2), Low (1) and No mapping (-)

* PSOs will be developed by respective programme coordinator at institute level. As per latest NBA guidelines, formulating PSOs is optional

G) Teaching & Learning Scheme:

Course Title	Scheme of Study (Hours/Week)				
	Classroom Instruction (CI)		Notional Hours (TW/ Activities+ SL)	Total Hours (CI+TW/ Activities)	Total Credits (C)
	L	T			
Open Educational Resources	01	-	-	01	01

Legend:

CI: Classroom Instruction (Includes different instructional/implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem based learning etc. to deliver theoretical concepts)

LI: Laboratory Instruction (Includes experiments/practical performances /problem-based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)

Notional Hours: Hours of engagement by learners, other than the contact hours for ensuring learning.

TW: Term Work (includes assignments, seminars, micro projects, industrial visits, any other student activities etc.)

SL: Self Learning, MOOCs, spoken tutorials, online educational resources etc.

C: Credits = (1 x CI hours) + (0.5 x LI hours) + (0.5 x Notional hours)

Note: TW and SL have to be planned by the teacher and performed by the learner under the continuous guidance and feedback of teacher to ensure outcome of learning.

H) Course Curriculum Detailing: This course curriculum detailing depicts learning outcomes at course level and session level and their attainment by the students through Classroom Instruction (CI), Laboratory Instruction (LI), Term Work (TW) and Self Learning (SL). Students are expected to demonstrate the attainment of Theory Session Outcomes (TSOs) and Lab Session Outcomes (LSOs) leading to attainment of Course Outcomes (COs) upon the completion of the course. While curriculum detailing, NEP 2020 related reforms like Green skills, Sustainability, Multidisciplinary aspects, Society connect, Indian Knowledge System (IKS) and others must be integrated appropriately.

I) Theory Session Outcomes (TSOs) and Units: T2400009

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
<i>TSO 1a.</i> Explain the difference between OER and other free educational materials. <i>TSO 1b.</i> Describe the challenges and benefits of using OER in a class. <i>TSO 1c.</i> Apply various aspects of evaluating OER before use <i>TSO 1d.</i> Explain necessity to assess an OER's adaptability. <i>TSO 1e.</i> Use preliminary search for open educational resource. <i>TSO 1f.</i> Find OER using various resources.	Unit-1.0 Open Educational Resources 1.1 OER - definition 1.2 What is NOT OER. 1.3 Benefits of using OER – Benefits to Students - Access to Quality Education 1.4 OER - Benefits to Faculty - Use, Improve and Share, Network and collaborate with peers, Lower Cost, Improve access to information 1.5 Challenges of Using OER – Subject Availability, Format and Material type availability, Time and Support availability 1.6 Evaluating OER – a) Clarity, Comprehensibility, and Readability, b) Content and Technical Accuracy, c) Adaptability and Modularity, d) Appropriateness and Fit, e) Accessibility	CO1

Major Theory Session Outcomes (TSOs)	Units	Relevant COs Number(s)
	1.7 Finding Open Content - OER Search Scenario Filter by Usage Rights in Google, Repositories and Search Tools, Subject-specific Repositories	
<i>TSO 2a.</i> Explain benefits of copyright protection for creator <i>TSO 2b.</i> Explain exceptions and limitations to copyright law <i>TSO 2c.</i> List rights granted to copyright holders. <i>TSO 2d.</i> Explain Exceptions and limitations to copyright law <i>TSO 2e.</i> Explain Fair use/fair dealing apply to copyright <i>TSO 2f.</i> Elaborate Public domain and how does it relate to copyright <i>TSO 2g.</i> Elaborate penalties for copyright infringement. <i>TSO 2h.</i> Explain copyright for digital content and the internet. <i>TSO 2i.</i> Explain use of copyrighted works in education <i>TSO 2j.</i> Explain the use of free licenses	Unit-2.0 Copyright and Open Licensing 2.1 Copyright and what it does protect, benefits of copyright protection for creators, duration of copyright protection last, rights granted to copyright holders. 2.2 Exceptions and limitations to copyright law, fair use/fair dealing apply to copyright 2.3 Public domain and its relation to copyright. 2.4 Penalties for copyright infringement 2.5 Apply copyright to digital content and the internet 2.6 Use of copyrighted works in education. 2.7 Open Licenses – GNU – Free Documentation license, Free Art License 2.8 Why Free Licenses – Retain, Reuse, Revise, Remix, Redistribute	CO2
<i>TSO 3a.</i> Describe the four different Creative Commons License components. <i>TSO 3b.</i> Explain the reason some CC-licensed content might not be considered OER. <i>TSO 3c.</i> Explain the Strength and weakness of four Open CC Licenses <i>TSO 3d.</i> Choose the right Creative Commons license for work. <i>TSO 3e.</i> Apply a Creative Commons license to existing work. <i>TSO 3f.</i> Use of Creative Commons licenses for commercial purposes. <i>TSO 3g.</i> Modify a work licensed under Creative Commons. <i>TSO 3h.</i> Revoke a Creative Commons license, combine works with different Creative Commons licenses <i>TSO 3i.</i> Differentiate between Attribution and Citation	Unit-3.0 Creative Common Licenses 3.1 Alternatives to copyright as Creative Commons licenses. 3.2 Four components of creative common Licenses – Attribution, Share- Alike, Non – commercial, No Derivatives 3.3 Choosing a Creative common licenses – Wiley's 5 Rs and Creative Common Licenses 3.4 Four Open CC Licenses and Their Strengths and Weaknesses – (a) CC BY (b) CC BY SA (c) CC BY NC (d) CC BY NC SA 3.5 Attribution Vs Citation - Creative Commons licensed work without giving attribution 3.6 Apply a CC License - choose the right Creative Commons license for work, apply a Creative Commons license to existing work, Creative Commons licenses be used for commercial purposes, modify a work licensed under Creative Commons, revoke a Creative Commons license, combine works with different Creative Commons licenses	CO3

Note: One major TSO may require more than one Theory session/Period.

J) Suggested Term Work/ Activities and Self Learning: Some sample suggested assignments, micro project and other activities are mentioned here for reference.

a. Assignments:

Related to Open Educational Resources – CO1

- i. OER help to reduce the cost of education for students. Justify?
- ii. Explain why it is necessary to assess an OER's adaptability?

- iii. Identify four search tools for finding open educational resources?
- iv. Identify at least two search tools for finding openly licensed media?

Related to Copyright – CO2

- i. Explain copyright and what does it protect
- ii. Explain the rights granted to copyright holders
- iii. Describe the exceptions and limitations to copyright law
- iv. Elaborate the way fair use/fair dealing apply to copyright?
- v. Describe the public domain and its relationship with copyright
- vi. Elaborate the penalties for copyright infringement?
- vii. Explain copyright apply to digital content and the internet
- viii. Explain the way copyright law address the use of copyrighted works in education

Related to Creative Common Licenses – CO3

- i. Explain various Creative Commons licenses
- ii. Describe, how can you apply a Creative Commons license to your existing work?
- iii. Explain the benefits of using Creative Commons licenses?
- iv. Elaborate, how you can modify a work licensed under Creative Commons?
- v. Are Creative Commons licenses valid worldwide?
- vi. Elaborate how Creative Commons license can be revoked, once it has been applied to your work?
- vii. Explain, how anyone use a Creative Commons licensed work without giving attribution?
- viii. Explain the limitations/restrictions while using works with Creative Commons licenses?

b. Micro Projects:

1. Collect information on the impact of OER on cost savings and student engagement.
2. Search at least four OER related to topic of your Engineering Discipline over Internet. Evaluate the material based on the relevance, accuracy and usability.
3. Explore the different types of resources under creative Commons licenses (e.g., CC BY, CC BY-SA, CC BY-NC, etc.) and their specific permissions and restrictions.
4. Create a comparative analysis chart or infographic that visually represents the key characteristics of each license.
5. Select minimum 5 real-world examples from different domains (such as music, art, literature, or education) where creators have used Creative Commons licenses.

c. Other Activities:

1. Seminar Topics:
 - OER Quality Assurance
 - OER Repositories and Platforms
 - Creative Commons and Digital Media
 - Creative Commons in the Visual Arts
 - Examine the legal implications of using Creative Commons licenses, including the obligations and responsibilities of both creators and users and present it.
2. Self-learning topics:
 - Open Licensing and Copyright: Understanding the Legal Framework for OER
 - Creative Commons and the future of Copyright
 - Copyright and Open Access Publishing
 - Copyright and Software

- K) Suggested Instructional/Implementation Strategies:** Different Instructional/ Implementation Strategies may be appropriately selected, as per the requirement of the content/outcome. Some of them are Improved Lecture, Tutorial, Case Method, Group Discussion, Portfolio Based, Learning, Role Play, Live Demonstrations in Classrooms, Field Information and Communications Technology (ICT)Based Teaching Learning, Blended or flipped mode, Brainstorming, Expert Session, Video Clippings, Use of Open Educational Resources (OER), MOOCs etc.

L) List of Major Laboratory Equipment, Tools and Software: (If Any)

S. No.	Name of Equipment, Tools and Software	Broad Specifications
1.	Computers	Desktop computer with word processing and presentation facility
2.	Internet	Internet Connectivity

M) Suggested Learning Resources:

(a) Books:

S. No.	Titles	Author(s)	Publisher and Edition with ISBN
1.	The OER Starter Kit.	Abbey Elder - 2019	IA: Iowa State University Digital Press, available under a Creative Commons Attribution 4.0 International License. Retrieved from iastate.pressbooks.pub/oerstarterkit
2.	A Brief History of Open Educational Resources	Bliss, T J and Smith, M. – 2017	In: Jhangiani, R S and Biswas-Diener, R. (Eds.) Open: The Philosophy and Practices that are Revolutionizing Education and Science (pp. 9–27). London: Ubiquity Press. DOI: https://doi.org/10.5334/bbc.b .

Note: Above listed books are available in soft form and can be downloaded as given respective link

(b) Online Educational Resources:

- OER for Empowering Teachers Instructional Material by P. Malliga is licensed under a Creative Commons Attribution 4.0 International License.
- William & Flore Hewlett Foundation. (n.d.). OER defined. Retrieved from <https://hewlett.org/strategy/open-educational-resources/>
- Free Software Foundation. (2008). GNU Free Documentation License. Retrieved from <https://www.gnu.org/licenses/fdl.html>
- Copyleft Attitude. (2007). Free Art License 1.3. Retrieved from <http://artlibre.org/licence/lal/en/>
- Free Software Foundation. (n.d.). What is copyleft? Retrieved from <https://www.gnu.org/copyleft/copyleft.html>

Note: Teachers are requested to check the creative commons license status/ financial implications of the suggested, online educational recourses before use by the students.
